FOUNDRY
EST. 1902
TRADE JOURNAL
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SHOTBLAST ROOMS

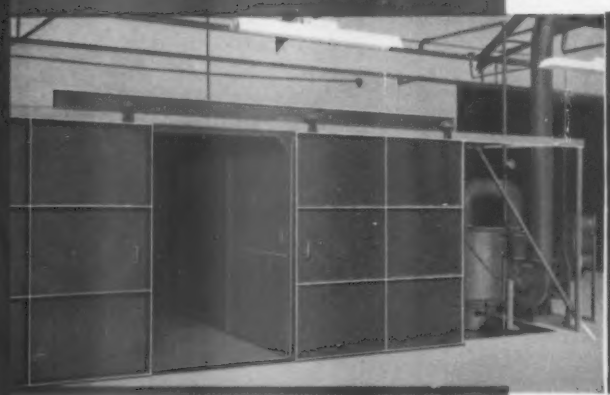
SHOTBLAST CABINETS

BALE OUT FURNACES

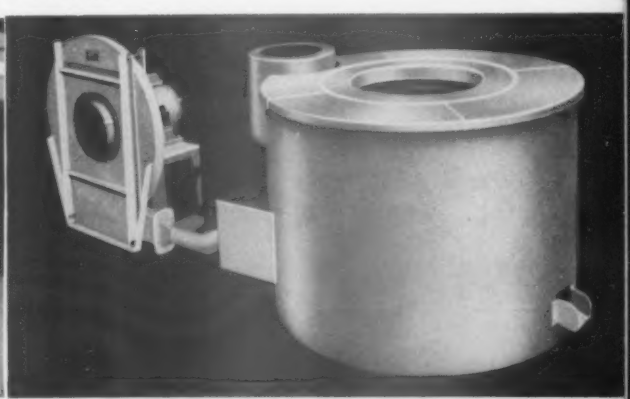
LIFT OUT FURNACES

CUPOLAS

3' × 3' SHOTBLAST CABINET



16' × 8' SHOTBLAST ROOM



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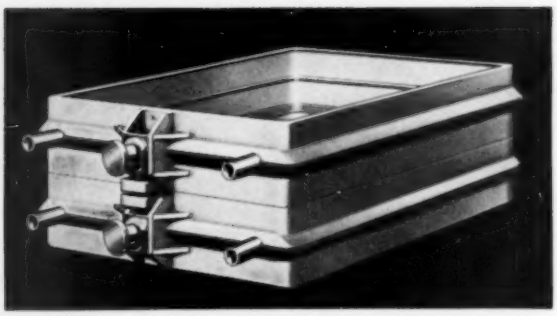

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Illustration shows model style 'SLT'

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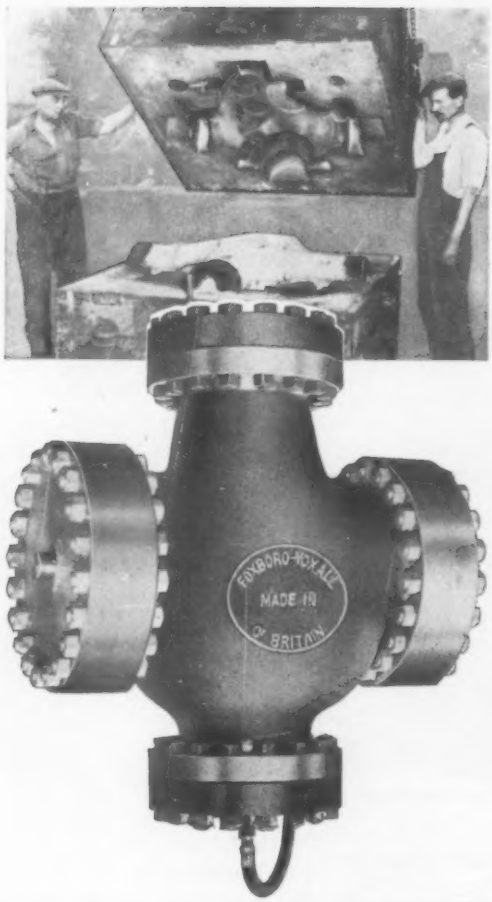

Carbon steel valve casting, weight 3 tons, tested under pressure at 2,000 lbs per sq. in., for oil-installation. Photo of core and casting by courtesy of Messrs Lake & Elliot, Ltd., Iron and Steel Founders, Braintree, Essex.

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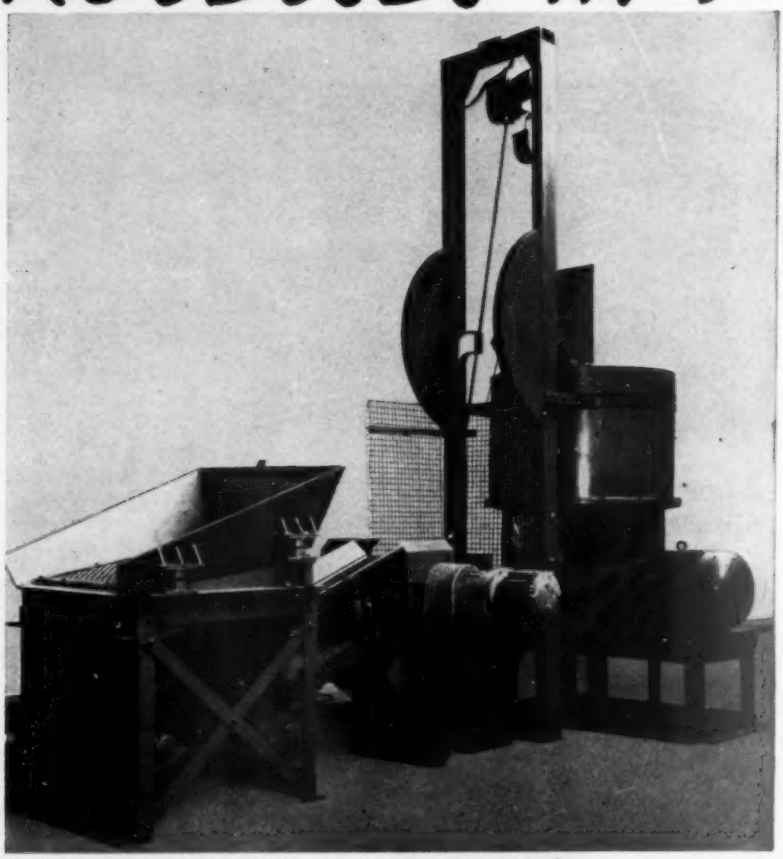

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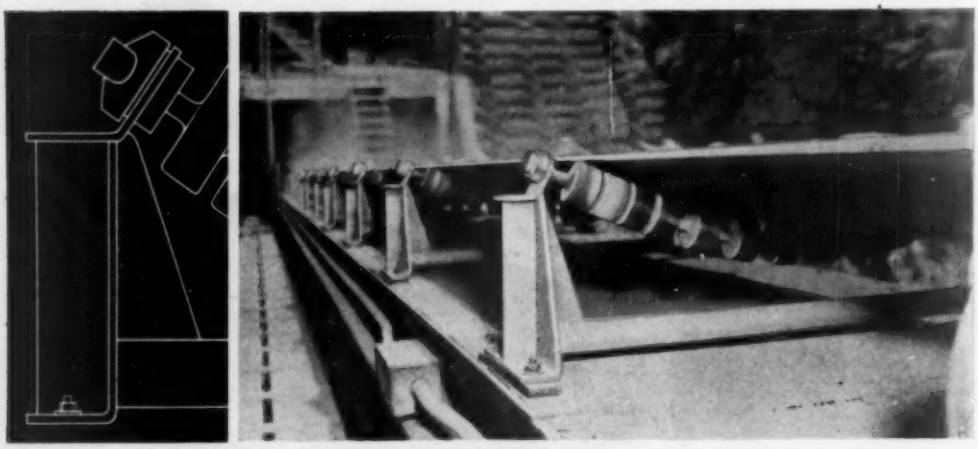
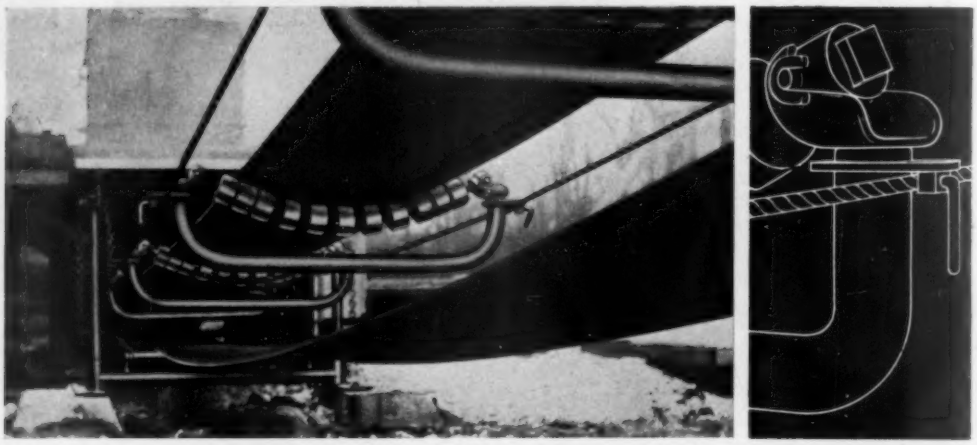
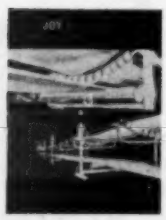


TWO SAVING WAYS WITH BELT CONVEYORS



JOY LIMBEROLLER IDLERS & LIMBEROPE CONVEYOR STRUCTURE



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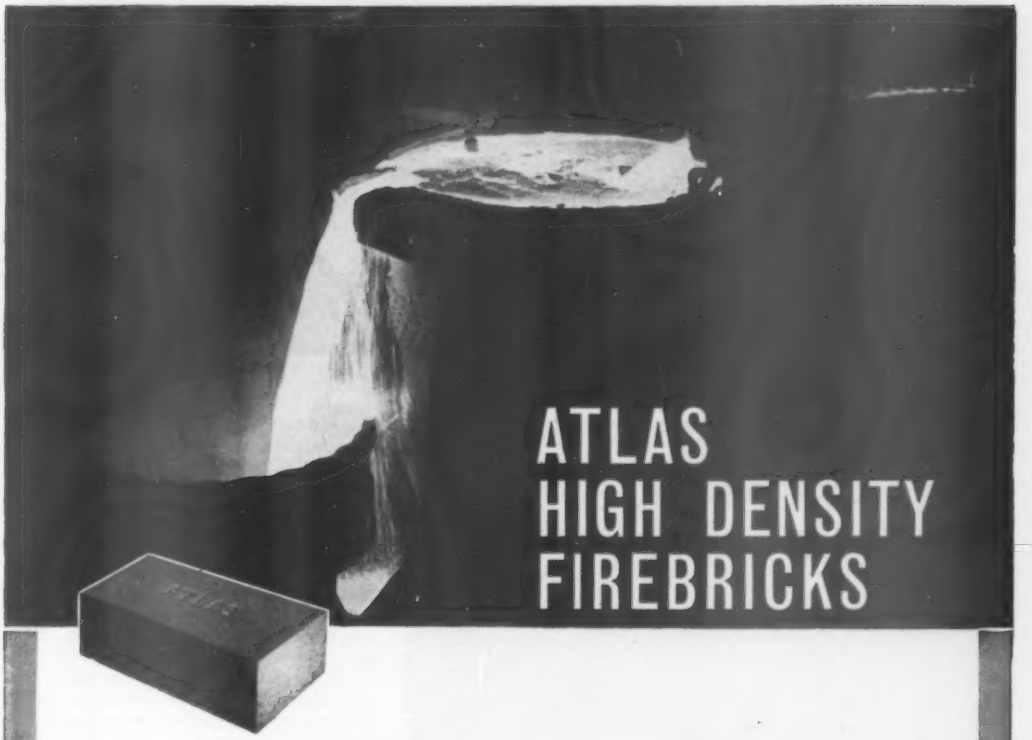

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ILLUSTRATION

Tapping a furnace at Abbey Melting Shop, Steel Company of Wales Ltd. Ladle Bottoms are ATLAS Firebricks.

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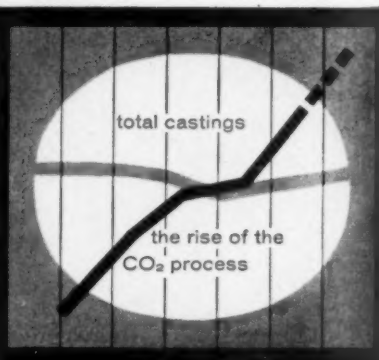

The simplicity of the CO_2 sodium silicate process is bringing important improvements to foundry productivity. For these reasons: A single type of sand is used for both cores and moulds. This cuts down mixing and testing. Stove drying is completely eliminated, saving cranage space and fuel. With no lengthy stoving and cooling, fewer mould boxes are needed and turn round is rapid. Bonding by CO_2 injection is done on the spot and takes only a few minutes. There is no sagging because of the excellent dry strength of the sand and sodium silicate mix, no distortion, because the bonding process is accurately controllable. This leads to fewer rejects, greater casting yield and much improved dimensional accuracy and finish. The whole process requires the simplest equipment and makes for better working conditions with reduced fumes and dust.

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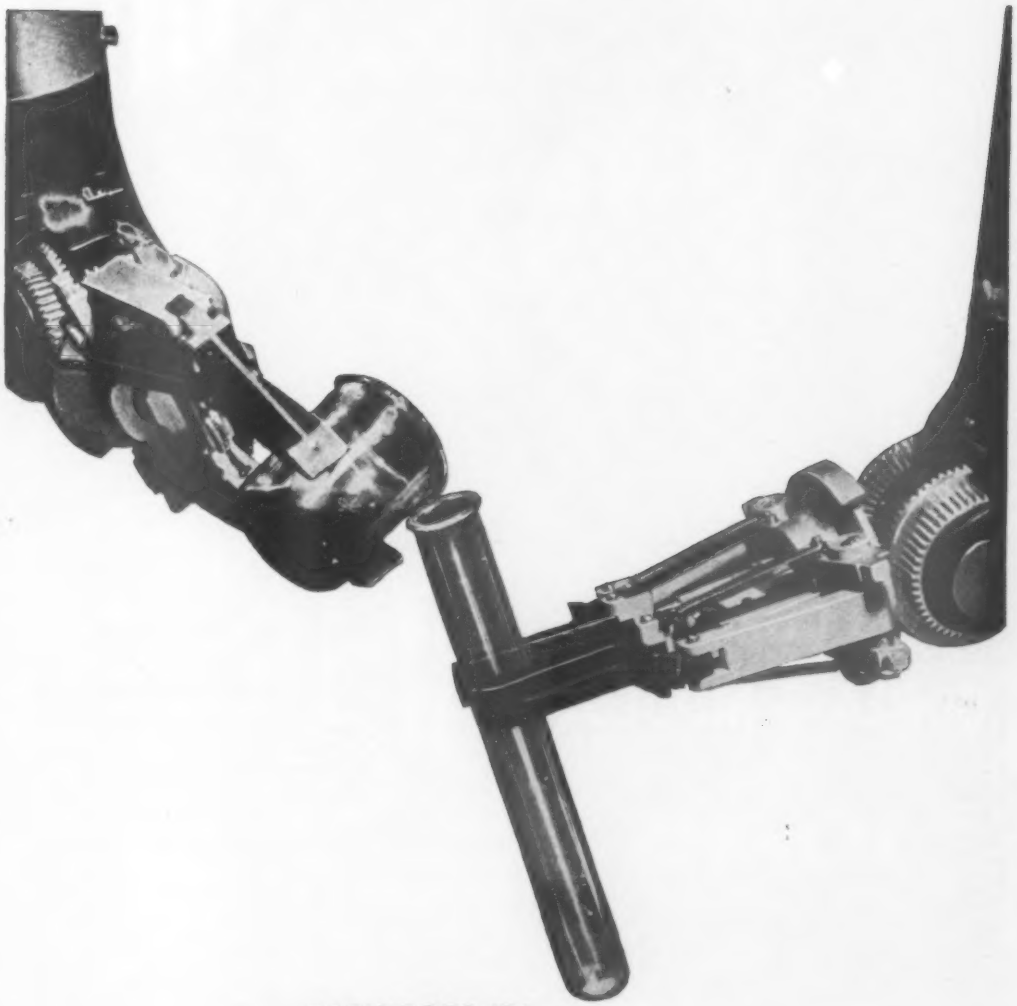

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The photographs appear by courtesy of GLOUCESTER FOUNDRY LIMITED

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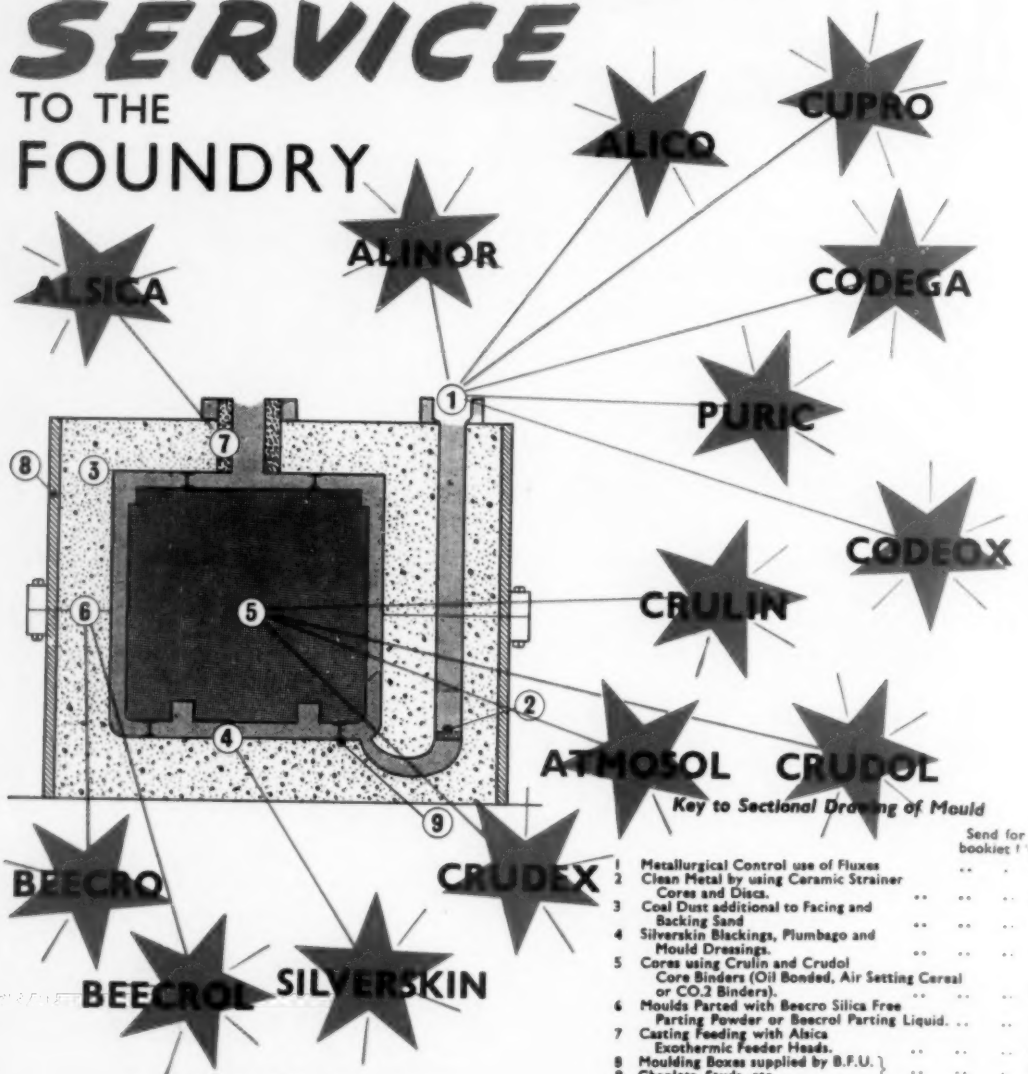

Key to Sectional Drawing of Mould

		Send for booklet No.
1	Metallurgical Control use of Fluxes	3
2	Clean Metal by using Ceramic Strainer Cores and Discs.	4
3	Coal Dust additional to Facing and Backing Sand	1
4	Silverskin Blackings, Plumbago and Mould Dressings.	1
5	Cores using Crulin and Crudol Core Binders (Oil Bonded, Air Setting Cereal or CO.2 Binders).	2
6	Moulds Parted with Beecro Silica Free Parting Powder or Beecrol Parting Liquid.	1
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8	Moulding Boxes supplied by B.F.U.	5
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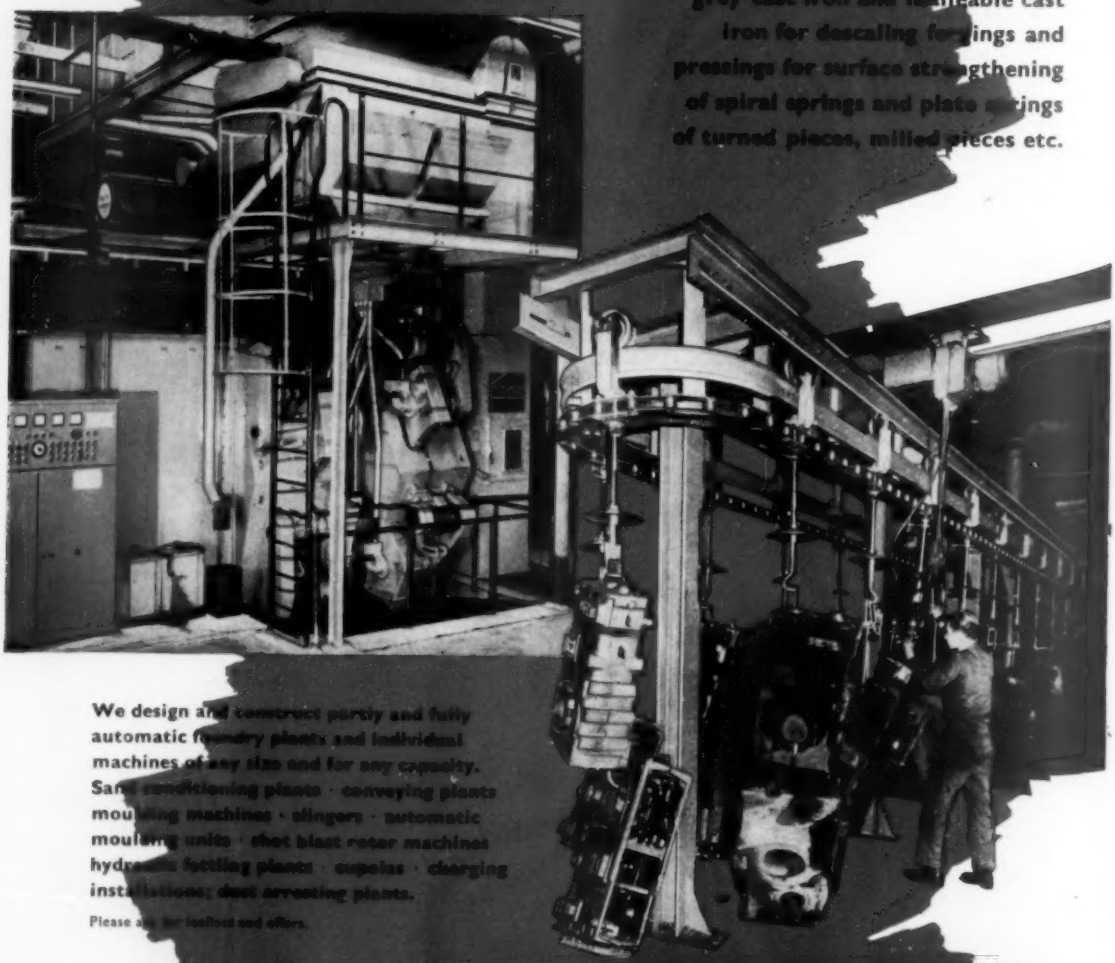

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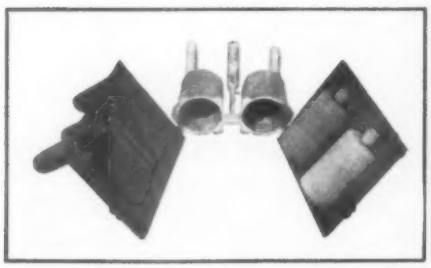

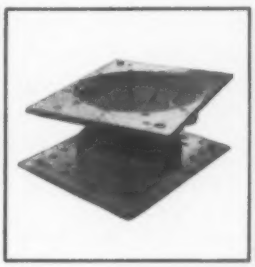

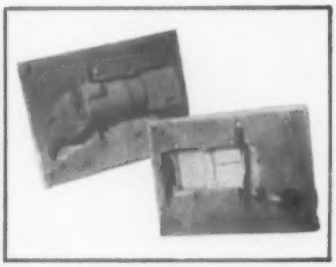

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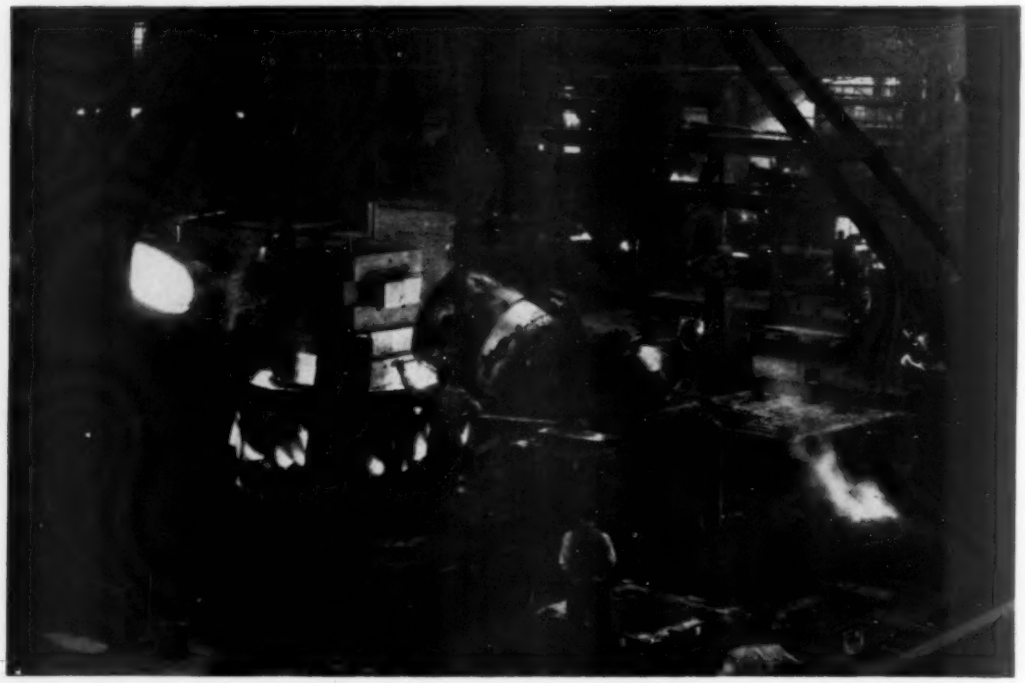
FOUNDRY MECHANISATION



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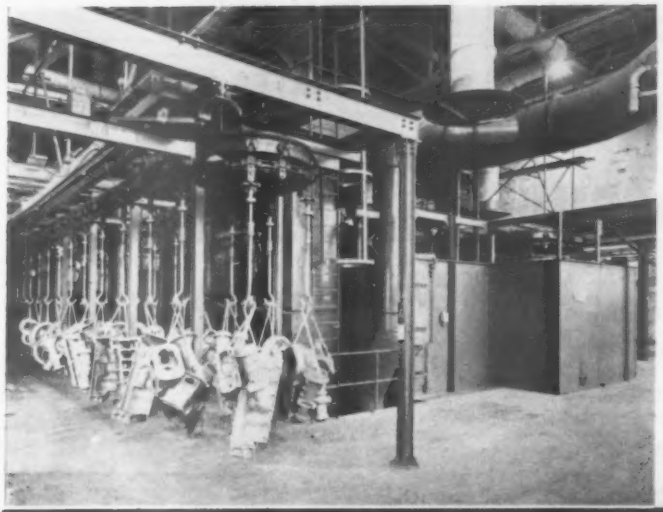

OVERHEAD MONORAIL CONVEYOR ABRASIVE CLEANING PLANTS

One of two Overhead Monorail Conveyor plants installed in the foundry at the Ford Motor Co. Ltd., Dagenham, for cleaning tractor and commercial components. The machine is equipped with six centrifugal blast units, which give complete cleaning coverage to the heavily loaded conveyor hangers passing through the cabinet.

DUAL TABLE WHEELABRATOR PLANTS

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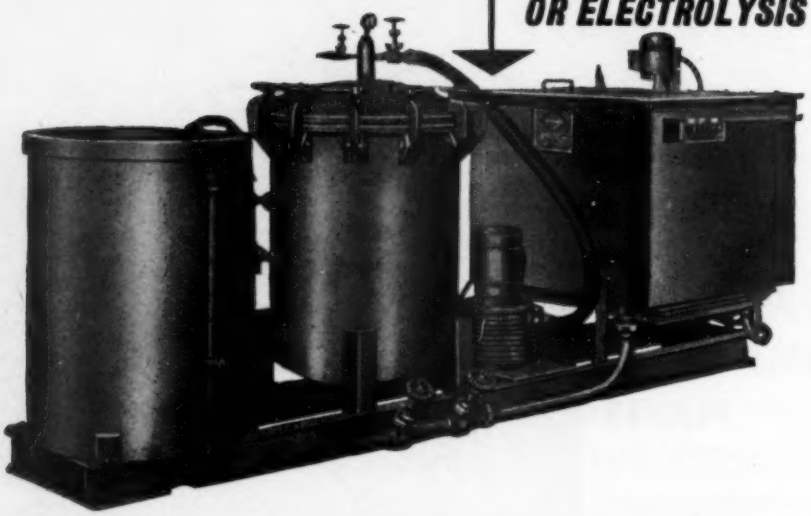

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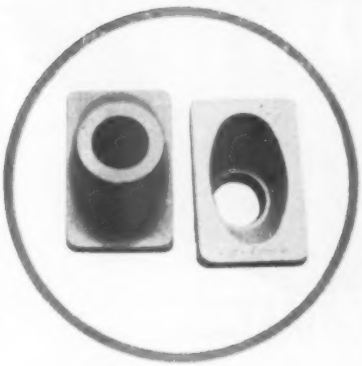

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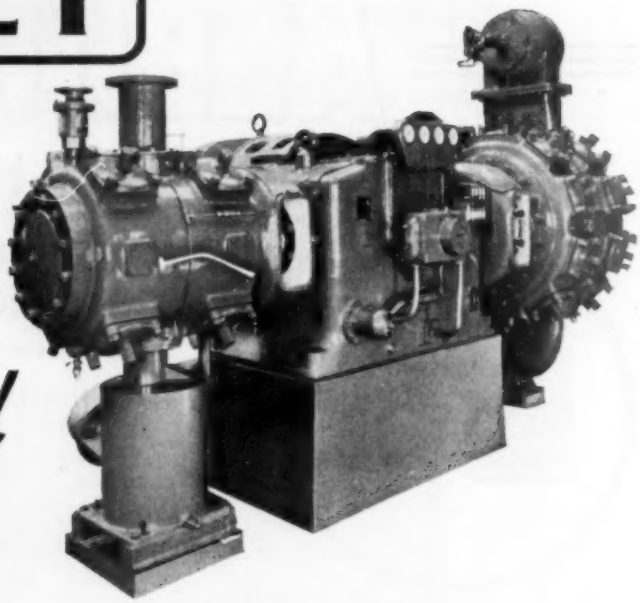

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Combining the known advantages of the horizontally opposed design with Alley's long experience of high-class compressor manufacture, the Alley balanced opposed unit is an attractive proposition wherever compressed air is required.

It is completely self-contained and totally enclosed; intercooler, oilcooler and motor are compactly built on. Being vibration-free it can be installed on minimum foundation, simply bolted down and is then ready to run.

SINGLE & TWO STAGE MACHINES
OUTPUTS TO 12,000 C.F.M.

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Better handling facilities have been installed at Carlisle by our associates

RICHARDSON'S MOSS LITTER Co. Ltd.

to cope with the demand which you, the discerning foundryman, have created.

IF YOU HAVE NOT YET TAKEN ADVANTAGE OF OUR OFFER, MAY WE RESPECTFULLY SUGGEST IN YOUR OWN INTERESTS THAT YOU WRITE TO HARBOROUGH FOR A FREE WORKING SAMPLE AND FULL PARTICULARS INCLUDING A COPY OF THE B.C.I.R.A. JOURNAL REPORT ON THIS PRODUCT.

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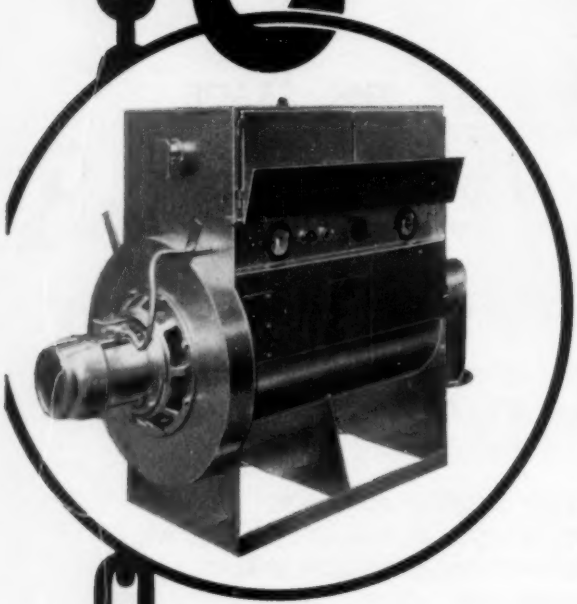
PORTABLE ELECTRIC MOULD DRIERS



. . . designed for drying floor moulds or large box moulds for ferrous and non-ferrous metal castings. They operate by forcing hot air over the mould surface and through the sand giving quicker and more efficient drying than is normally achieved by other methods. Using air temperatures lower than hot gases, and less than one third the quantity of heat, they reduce drying times by half. Heating is uniform throughout the mould and despite rapid drying, surfaces remain free from cracks and cleaner castings are produced.

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* Power input is regulated automatically.
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1 No hardener is needed—
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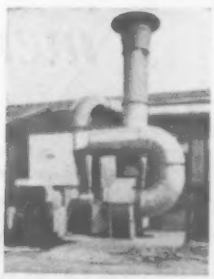

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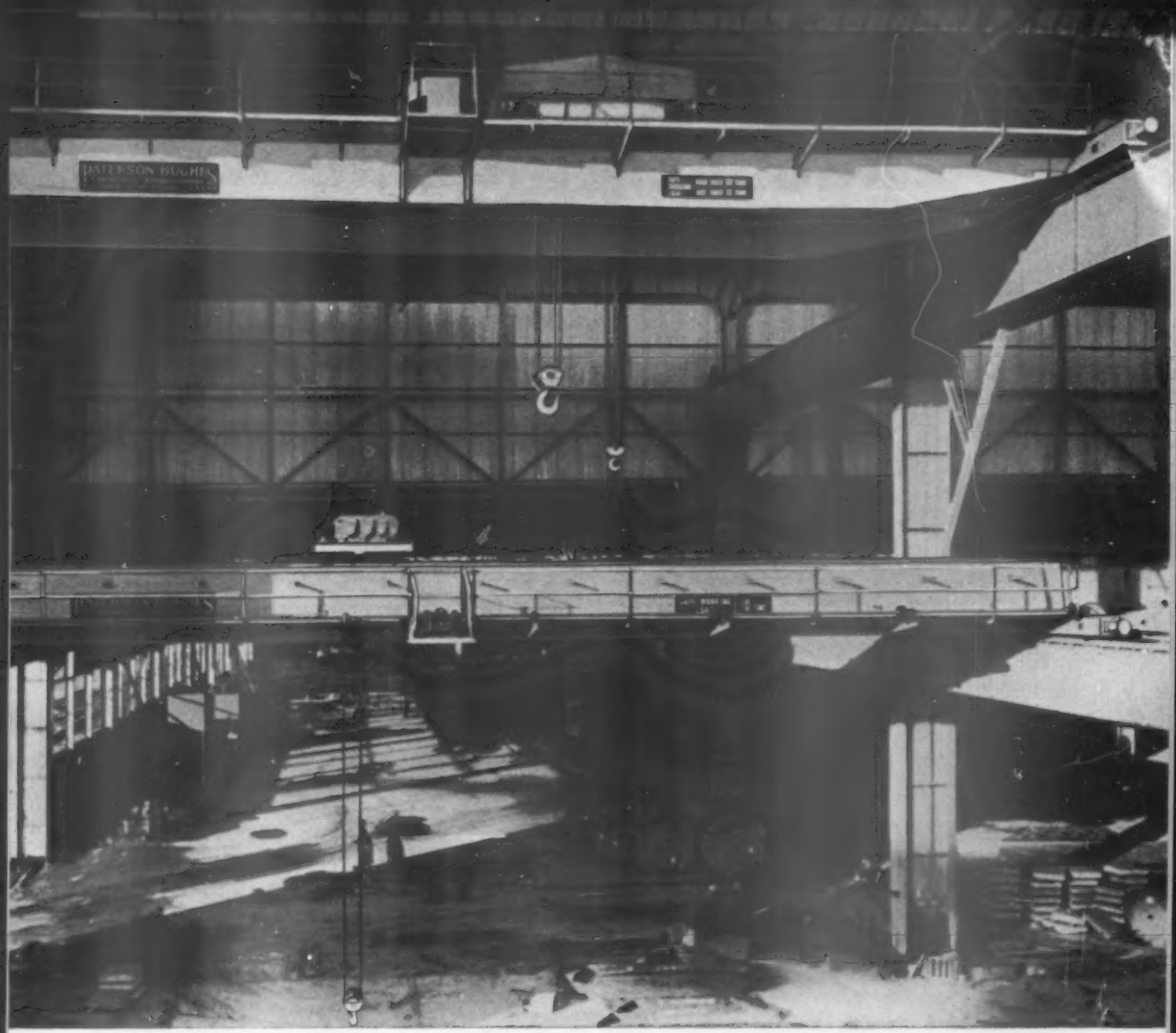

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in capacities from 1000 lb to 200 tons

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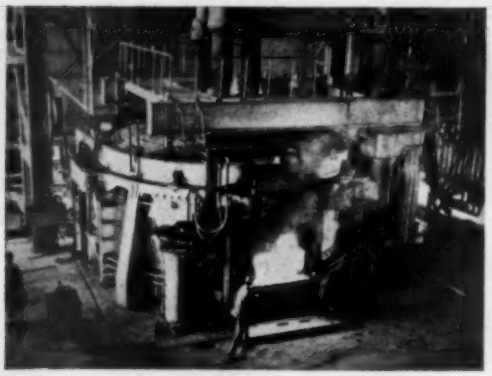
G.W.B. Lectromelt 36,000 kVA Steel Melting Arc Furnace with 24' 0" diameter shell



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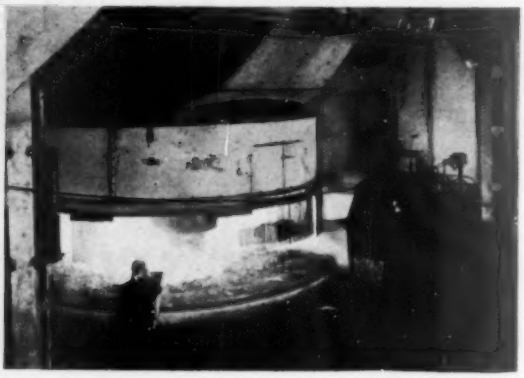

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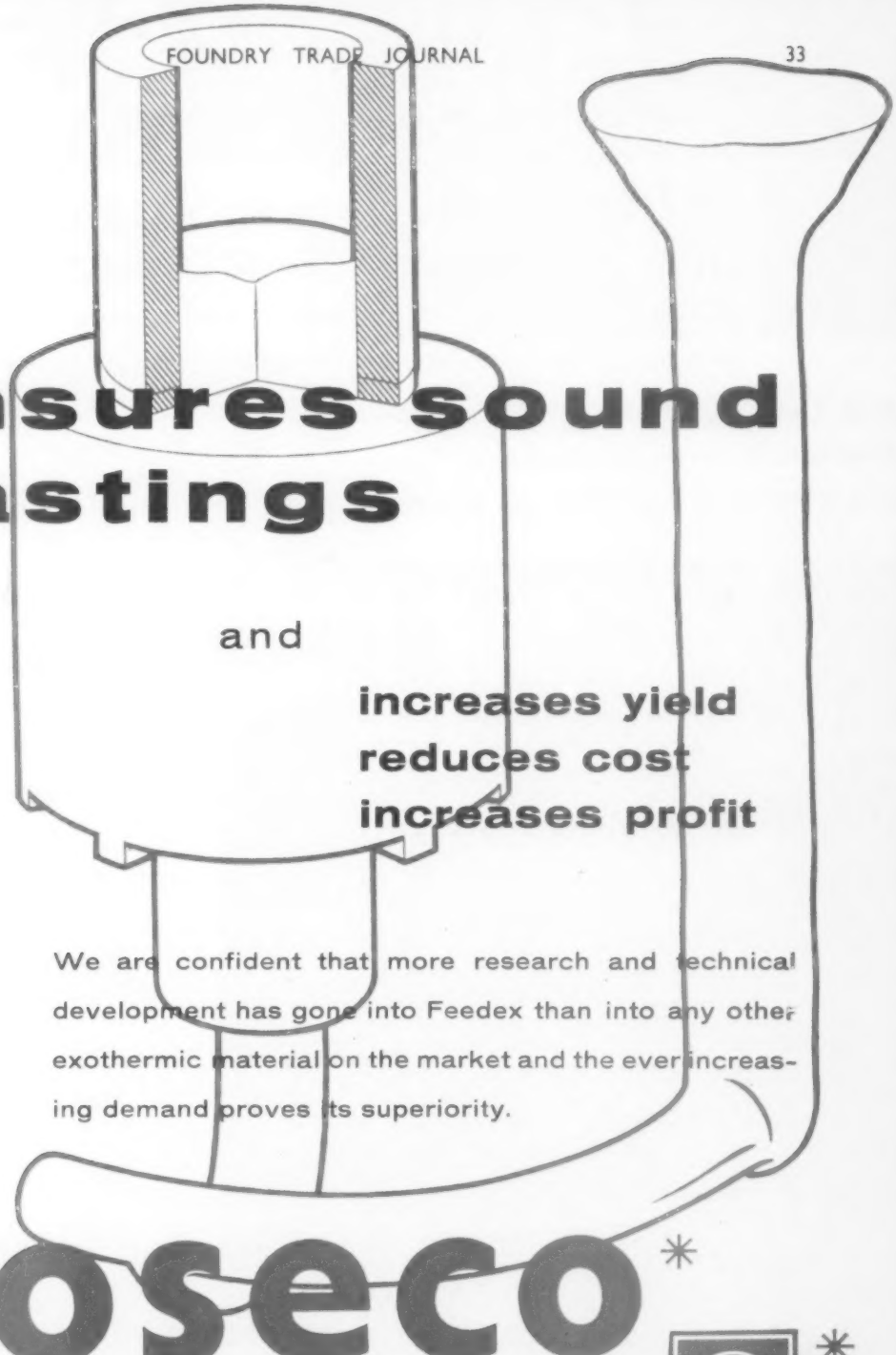

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increases yield
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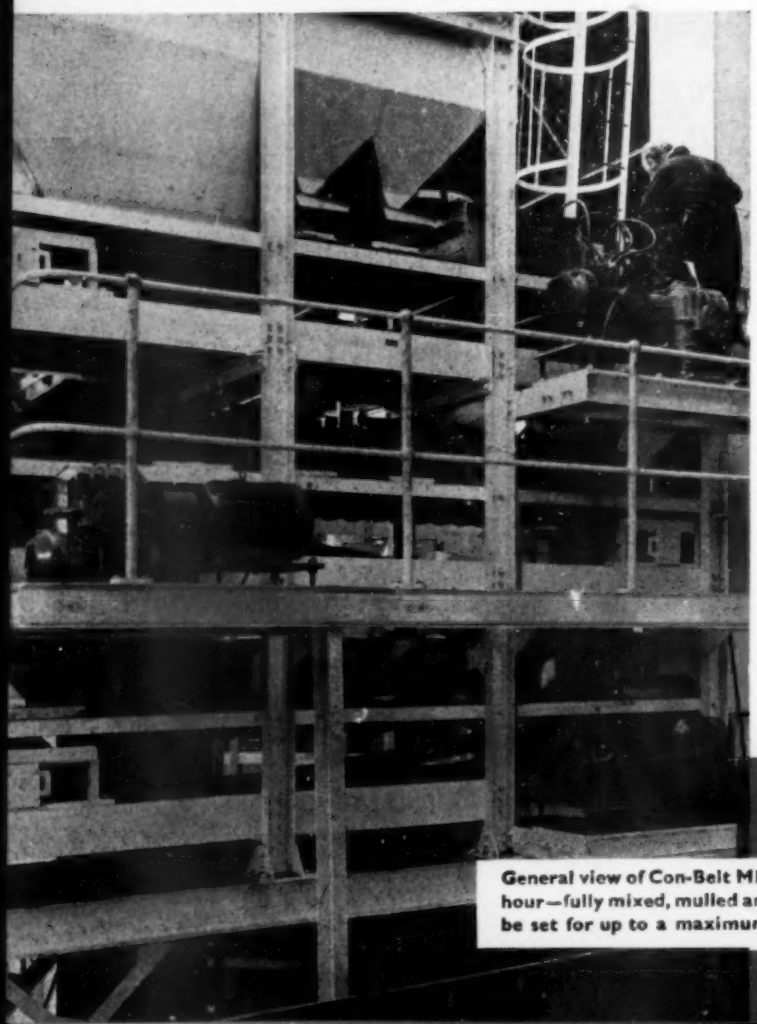

General view of Con-Belt Mill handling 60 tons of sand per hour—fully mixed, mulled and aerated (this same Mill can be set for up to a maximum of 90 t.p.h.)—for grey iron.

ADDITIONS

ATOMIZED MOISTURE

MIXING

MULLING

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DISINTEGRATION

COOLING

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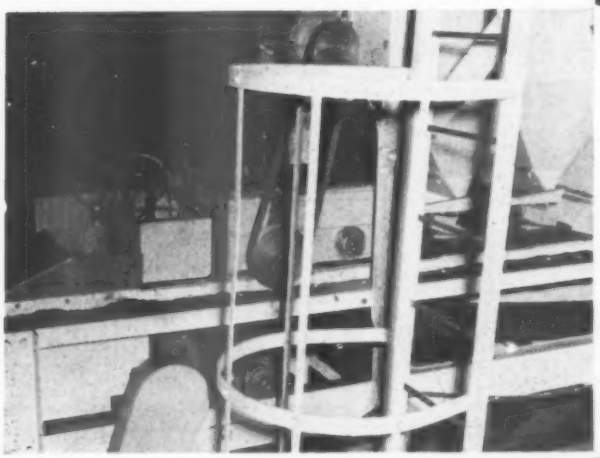
This is the only Mill

WORLD PATENT APPLICATIONS PENDING

MILL

The 60 t.p.h. Con-Belt Mill top mixing belt deck, additions hoppers, 'first Disintegrator/Mixer and water addition' and two mixing and mulling belt decks, each with aerator unit.



Close up of top deck showing bond material and coal dust hoppers with vibratory feeders in front of main feeding and regulating hopper; first Disintegrator/Mixer and adjustable air pressurized atomizer for intensive distribution of moisture.

Mulling and roller assembly on first and second mixing and mulling belt decks. All muller rollers power driven at a different speed to conveyor belts. Muller rollers cover full effective belt width and are free to rise and fall. Vertical divertors and ploughs between each pair of muller rollers.

designed for high outputs—up to 500 tons per hour!

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wide range of permeabilities
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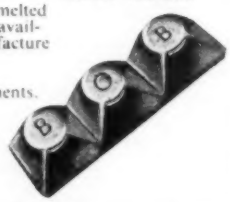
Containing Vanadium and Titanium, with low phosphorus and sulphur contents, used for High Duty Castings, Cylinders, Piston Rings, Rolls, etc., and in Open Hearth and Electric Steel making.

AND NOW... Bremanger O.B. IRON

The purest Electrically smelted Oxygen Blown Pig Iron available. Ideal for the manufacture of NODULAR IRON. Particularly free from undesirable residual elements. Tensile and structure "as-cast", similar to annealed Ferritic Iron.



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The foundry industry of the United Kingdom is represented by the following organisations, many of whose proceedings are regularly reported in this JOURNAL:—

Ironfounding Employers' Associations

COUNCIL OF IRONFOUNDRY ASSOCIATIONS

Chairman: **M. J. Glenny**, Dover Engineering Works, Limited, Arundel St., London, W.C.2. *Director:* **Kenneth Marshall.** *Ass. Director:* **J. W. Butler.** *Secretary:* **D. L. Farrant,** 14, Pall Mall, London, S.W.1. 'Phone: WHItehall 7171. *Participating Associations:* British Cast Iron Research Association (affiliated); Institute of British Foundrymen (affiliated), and the following:—**Association of Automobile and Allied High-duty Ironfounders.** Secretaries, Heathcote and Coleman, 69, Harborne Road, Edgbaston, Birmingham, 15. 'Phone: Edgbaston 4141. 'Grams: "Clarify," Birmingham, 15. **British Ironfounders' Association and British Bath Manufacturers' Association.** Director and Secretary: J. Galbraith Sneddon, C.A., 145, St. Vincent Street, Glasgow, C.2. 'Phone: Central 2891. 'Grams: "Groundwork," Glasgow. **British Grit Association** (affiliated).—Secretary: J. Campbell MacGregor, 10, Bank Street, Airdrie, Lanarkshire. **British Malleable Tube Fittings Association.**—Secretary: F. B. Ridgwell, 196, Shaftesbury Avenue, London, W.C.2. 'Phone: TEMple Bar 6052-3. 'Grams: "Brimatufia," London. **Cast-Iron Chair Association.**—Secretaries: Peat, Marwick, Mitchell & Co., The Cast Iron Chair Association, Queen's Square, Middlesbrough, Yorkshire. **Cast Iron Heating Boiler and Radiator Manufacturers' Association.**—Secretary: J. R. Aldam, 69, Cannon Street, London, E.C.4. 'Phone: CITy 4444. **British Cast Iron Pressure Pipe Association.**—Secretary: W. I. Campbell, 14, Pall Mall, London, S.W.1. 'Phone: WHItehall 7941. **Cast Iron Segment Association.**—Secretary: W. Rose, Stanton Ironworks Company, Limited, P.O. Box 3, near Nottingham. **National Association of Malleable Ironfounders.**—Secretary: E. N. Turner, Chamber of Commerce Offices, Tudor House, Bridge Street, Walsall. 'Phone: Walsall 5671. **National and Midland Ironfounders' Association.**—Secretary: F. W. Sims, 69, Harborne Road, Edgbaston, Birmingham, 15. **National Ingot Mould Association.**—Secretaries: Peat, Marwick, Mitchell & Company, 301, Glossop Road, Sheffield. 'Phone and 'Grams: Broomhill 63031. **Roll Makers Association of Great Britain.**—Secretaries: Peat, Marwick, Mitchell & Company, Beaufort House, Newhall Street, Birmingham, 3. 'Phone: Central 6661-3.

NATIONAL FEDERATION OF ENGINEERING & GENERAL IRONFOUNDERS

Chairman: **E. Kenneth Gould,** Goulds Foundries, Limited, Newport, Mon. *Secretaries:* **Mann, Judd & Co.,** 8, Fredericks Place, London, E.C.2. **Constituent Associations:** Ironfounders' National Confederation and National Ironfounding Employers' Federation.

IRONFOUNDERS' NATIONAL CONFEDERATION

Chairman: **R. A. S. Lomax,** Ashwell & Nesbit, Limited, Barkby Road, Leicester. Secretaries: **H. Overton, Salt & Company**, 12th Floor, City Centre House, 30, Union Street, Birmingham, 2. 'Phone: Midland 8427. **Branch Associations:** *East and West Ridings.*—Secretary: C. L. Carver, Ellerby Foundry, Ltd., Ellerby Lane, Leeds, 9. 'Phone, Leeds 31538. *London, Home and Eastern Counties and Midlands.*—Secretary: D. Swain, H. Overton, Salt & Company, 30, Union Street, Birmingham, 2. *North Midlands:*—Secretary: F. Summers, Ashwell & Nesbit, Limited, Barkby Road, Leicester. 'Phone: Leicester 67151 *North Western.*—Secretary: D. Swain, H. Overton, Salt & Company, 30, Union Street, Birmingham.

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Secretary: **E. G. Donaldson, B.Sc.,** 5, East Bank Road, Sheffield, 2 'Phone: Sheffield 28647.

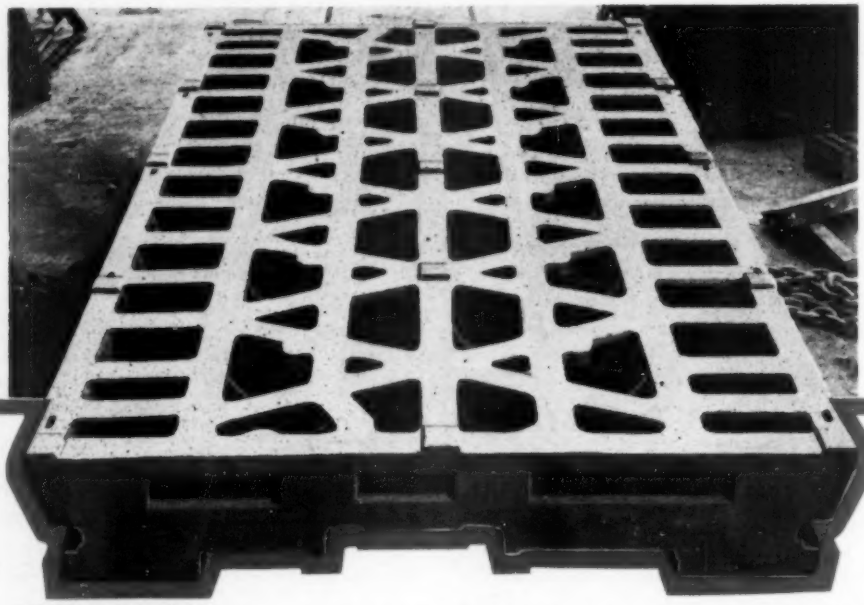
Research Associations:

BRITISH CAST IRON RESEARCH ASSOCIATION

Alvechurch, Birmingham. 'Phone and 'Grams: Redditch 2715-8.
Scottish Laboratories: Blantyre Industrial Estate, Blantyre, Lanarkshire. 'Phone Blantyre 486.

BRITISH STEEL CASTINGS RESEARCH ASSOCIATION

East Bank Road, Sheffield, 2. 'Phone: Sheffield 28647.



COROVIT SLASHES COREMAKING COSTS

at George Richards' Foundry

The coremaking time for the above 14 ton bed casting (19′ x 9½′ x 1¾′) for a horizontal boring machine was cut from 300 hours to 129 hours by using the Corovit cold setting technique. Further savings were made in decoring and fettling times, because Corovit cores reproduce accurately the dimensions of the corebox. And, of course, Corovit gives an improved finish, substantially reducing subsequent machining.

COROVIT is manufactured and sold in the U.K. solely by FORDATH, who prepay licence fees to Reichold Chemie A.G. of Switzerland. Reichold are the proprietors of British Patents 653,530 & 761,035. Thus foundries using COROVIT are automatically free from liability to suit for infringement of these patents when they use peroxide-group accelerators in their cold-setting work.

ASK **FORDATH** TO TELL YOU ABOUT **COROVIT** COLD-SETTING TECHNIQUE

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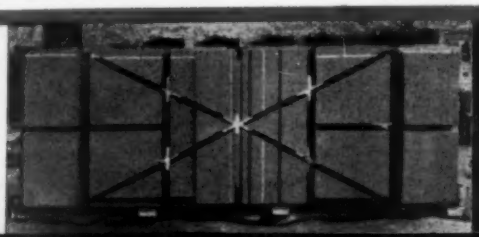

Above: One of the six 30 cwt. cores used in making the 14 ton casting. Each core measured 8′ x 3′ x 1′.

Above: Unstoved cold-set Corovit cores being lifted from the corebox in the green state.

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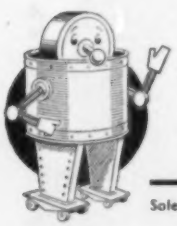
August's LIMITED FOUNDRY EQUIPMENT

Photograph by courtesy of the International Harvester Co. of Gt. Britain Ltd., Doncaster.



CONVEYORS . . .

Photograph shows: The August's Mould Conveyor (closing to pouring, to cooling, to shakeout), which is a unit of the large August's Mechanised Sand Plant.

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FOUNDRY
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Remuneration Survey

The Institution of Metallurgists, as a professional body, concerns itself with the remuneration received by its members of various age grades, and the most recent survey was carried out in 1960 and is the third of its kind; it asked those connected with the Institution to report their total annual earnings to August 31, 1960, which, for industrial metallurgists, means their salaries. The Schedule of Occupations was given under 16 headings, in seven areas of the United Kingdom, six of the Commonwealth, and five categories covering other countries. Not less than 71·5 per cent. of the 3,735 questionnaires sent out were returned, a significantly higher proportion than were returned in 1948 and 1956.

The results should be of considerable interest to employers in comparing salaries they pay to men of comparable qualifications and age grades, but the Institution makes it clear that the results are not intended to act as age-graded salary scales, but to give factual information relating to those members of the Institution who responded. The Institution was aided in the analysis and presentation of the data by Dr. D. P. Dudding. Taking licentiates, the junior grade of the Institution, the median line for the results, which are expressed both in figures and in graphical form, suggests that at age 22 the annual figure is £725 rising to £1,100 at age 30. For associates, the intermediate grade, the figure for age 26 is £1,050, rising to £1,775 at age 40. For Fellows, the senior grade, the figure at age 36 is £2,000, rising at age 50 to £3,000. It must be emphasized that these figures relate to the whole of the occupation groups other than students, men on National Service, men retired and not fully employed, or unemployed, and to the United Kingdom, and that the report makes it quite clear that considerable numbers of associates over 30, for example, and Fellows command more—often substantially more—than the median salaries. The median figures given represent double the corresponding amounts for 1948 and are a substantial increase on the corresponding figures for 1956.

This survey appears to be one of the most satisfactory of its kind to date, partly because of the fact that a majority of those eligible to communicate the figures, normally regarded as confidential—and which, of course, are so treated by the Institution—did report them, and the results have been presented with due regard to statistical requirements. It is felt that the industry will feel indebted to the Institution for the work that it has done in this direction.

Second GIFA Exhibition, 1962

The presence at the Vienna International Foundry Congress of a number of representatives of the foundry technical Press and other interested parties offered an opportunity which was grasped by the organizers of the second German GIFA foundry exhibition (to be held in Düsseldorf, September 1 to 9, 1962) to stage a reception on Sunday morning, June 18, at the Palais Pallavicini to explain the project. (Brief particulars of this exhibition have already been printed in this JOURNAL.) It was learned in Vienna that exhibition space is still available and it is expected that non-German participation will be quite considerable. The first such exhibition at Düsseldorf was held in 1956 (in conjunction with the International Foundry Congress of that year) and proved a huge success. For that to be organized for 1962, the exhibition area has been increased to approximately 70,000 sq. m. by re-arrangement and the building of two new halls. The power supply has also been augmented to permit the operation of machines and furnaces having high current consumptions. Whereas the 1956 GIFA showed an early stage in the automation of foundry machinery, a large number of fully-developed automatic units will be on view in 1962. The reduction of noise and dust extraction in foundries will be further aspects covered by the goods on display. A special display under the title "Vocational Training" is to form one of the focal points of the GIFA exhibition and there is to be a workshop in which apprentices will carry out moulding and casting.

The German show should provide interesting comparisons with American foundry equipment to be shown in connection with the International Foundry Congress to be held in Detroit earlier in 1962. Also, visitors to the US show and GIFA will be able to compare what they see with machinery and plant to be included in the foundry exhibition to be held in Birmingham in 1963.

During the course of the German exhibition, the *Verein Deutscher Giessereifachleute* (German Foundrymen's Technical Association) is to hold its annual conference and at this overseas visitors will be welcomed. Lectures have been arranged in such a way as to leave participants ample time to visit the Exhibition. Those readers interested in exhibiting or attending the Exhibition can obtain further information by writing to Nordwestdeutsche Ausstellungs-Gesellschaft MBH, Düsseldorf, or to Dr. P. Schnieder, secretary of the VDG, at 70, Sohnstrasse, Düsseldorf.

GKN House

Another change in the face of the Metropolis was marked by the official opening of GKN House last week as the London headquarters of Guest, Keen & Nettlefolds, Limited. Officially known as No. 22 Kingsway, the new seven-storey 92,000 sq. ft. block has risen on the site of the old Stoll Theatre, a position about midway between the City and the West End. Over 200 representatives of the Press and industry attended the house-warming reception, toured the building, and afterwards were entertained to luncheon in the magnificent boardrooms of the Group.

Built by the Token Construction Company, Limited (architects, Lewis Solomon, Kaye & Partners), the block comprises a boiler-house level, sub-basement, basement, ground floor and seven upper floors; approximately 500 employees are housed. There are two main entrance halls, both leading on to Kingsway, with a vehicle loading-bay at the rear, off Sardinia Street. Each entrance hall serves the offices by means of two 16-passenger automatic lifts. In addition, there is a 6-ft. wide staircase from each entrance hall. A car park in the basement and sub-basement provides garage accommodation for 46 cars. The main structural flooring consists of pre-stressed planks finished with 10,000 sq. yd. of Missanda hardwood. All foyers are paved with Terrazzo flooring and practically all offices and corridors are carpeted. Furnishings are on a lavish, if not luxurious, scale. The various constituent companies of the Group, however, have preserved some individuality in the choice of decor and furniture in their various sections. Included in the accommodation is a fully-equipped cinema to seat 50 people and part of the frontage on Kingsway at ground level is designed for showrooms.

Until 1960, the London address of the GKN Group was at 66, Cannon Street, but only a limited number of the staffs of the various companies could be housed there, others being scattered throughout the area. The new block brings all the London staffs together under one roof. In particular, of the sections of the Group, which embrace foundries, Guest, Keen, Nettlefolds (Cwmbran), Limited, is housed on the third floor and Guest Keen Iron & Steel Works on the sixth. Only the Sankey-Sheldon subsidiary has a floor to itself.

Ionising Radiations Regulations

Revisions in the requirements for the protection of workers against ionising radiations are laid down in a new statutory draft of Regulations published by the Ministry of Labour last Thursday. This second draft of the Ionising Radiations (Sealed Sources) Regulations, 1961*, is in substitution for that published on April 29, which the Minister, Mr. John Hare, has withdrawn. It is substantially the same as the original draft, and in the main merely clarifies the meaning. The most important changes proposed are a re-casting and clarification of the schedule, relating to maximum permissible doses, a variation in the regulation dealing with X-ray crystallography which would permit other protective arrangements as an alternative to de-energizing of the X-ray tubes, and a specification of the periods for which transfer records and records of tests of sealed sources are to be kept. The definition of "sealed source" has also been revised. Any objections to the proposed Regulations by or on behalf of the persons affected should be sent to the Minister of Labour, 8, St. James's Square, S.W.1, by July 29.

* H.M. Stationery Office, price 9d. net.

Social Security Agreement

The reciprocal Social Security Agreement which the United Kingdom concluded with the Federal Republic of Germany on April 20, 1960, has been ratified* and will come into force on August 1. The Agreement enables contributions in the two countries to be added together for the purpose of claiming social insurance benefits in either. Many people resident in the United Kingdom who were insured in Germany before the second world war will be entitled to arrears of pension from May, 1945. There is a Protocol which enables certain groups of citizens of the United Kingdom and Colonies to use the health services of the Federal Republic or to become voluntary contributors for that purpose. Those who think they may be affected by the Agreement should write to the Ministry of Pensions and National Insurance, Overseas Group, Newcastle upon Tyne.

* The Family Allowances, National Insurance and Industrial Injuries (Germany) Order, 1961 (S.I. 1961, No. 1202); obtainable from H.M.S.O., price 1s. 3d.

Vienna Diary ....

... by A. R. Parkes

Second Part of the Report on Proceedings of the 28th International Foundry Congress, held in Vienna from June 19 to 24.

The last issue of the JOURNAL gave a general account of the programme of events and the opening ceremony of this year's International Foundry Congress. The report continues here with a description of the main activities that occupied the delegates and visitors throughout the week, and concludes this section with the closing ceremony.

(Continued from page 7)

First Technical Sessions

Commencing at 1 p.m. the first technical deliberations of the Vienna International Congress (June 19 to 24) were held on the Monday afternoon, lasting until 3 p.m. In these, four Papers were presented (and some of them discussed) in two simultaneous sessions, one in the *Neuer Saal* and the other in the *Rittersaal* of the Congress Building.

In general, these early sessions provided an opportunity to test out the organization and particularly the instantaneous-translation services. The latter except for a minor hitch—due to not switching on the English in one of the rooms—generally worked very well. The arrangement whereby a delegate received a set of hearing apparatus (earphone and pocket receiver) at a bureau situated between the two conference rooms in exchange for his book of conference tickets worked very well and the writer heard of no case where the facility was abused. It was also found at this first session that more delegates were interested in the technical proceedings of the Congress than

Two group protographs of UK participants outside the Hofburg (Congress Hall). In the left-hand picture, from left to right, are Mr. J. D. Gardom, Mrs. Parkes, Mr. & Mrs. J. Harvey and Mrs. & Mr. R. Yeoman. In the second picture are Mr. G. Lambert, Mr. D. A. Richards (respectively, secretary and president of the Institute of British Foundrymen), Mrs. Blakiston, Mr. J. Blakiston and Mrs. Richards.

had been anticipated, for there was a short period when the supply of translation hearing-aids was exhausted. However, attendances for hearing the Papers was very varied at this and at the other technical sessions, numbers present ranging between 25 and 200.

As a general comment, it can be stated that authors often took overlong over introducing their Papers, though it must be remembered that little opportunity for advanced study of the Paper by delegates had been possible. Also, some of the chairmen were somewhat peremptory in closing a session; they seemed sometimes to take the lull which often occurs before the commencement of a discussion as a sign that no-one wished to speak.

Further comments on the technical Papers, extracts from them and from some of the discussions ensuing will be included in a later section of this report. It is a measure of the interest aroused by the Papers, however, that for one of them so great was the enthusiasm that the authors were asked to repeat the showing of their two films and this was carried through, although for those attending it delayed departure for the rest of the afternoon's programme.

Sightseeing

Joining coaches outside the Congress Hall, delegates (with their ladies) were next taken on conducted tours of the City of Vienna with commentaries en route in languages appropriate to the respective parties. In turn, they saw various architectural beauties of the capital city, the principal municipal and state buildings, memorials, gardens, palaces, libraries, museums, theatres, etc.

At this juncture, it should be reported that on this Monday afternoon, it became clear that the Congress was coinciding with a heatwave in Vienna. In fact for the whole of the rest of the week, the temperature climbed steadily and repetitively each day, making some of the working sessions somewhat of a strain and of the pleasure trips searches for shade. However, these conditions did enable delegates to see the City of Vienna in its brightest and lightest moods, the coolness of evening and the brilliant illuminations adding contrast to the daytime scenes.

Despite the oven-like heat (temperatures between 90 and 100 deg. F.) delegates and their ladies in 28 coaches departed for the sightseeing tour, first to the outskirts of the city, to visit the Schönbrunn Palace, the former Imperial summer residence. (It was here in early June that President Kennedy of the USA and Mr. Khruschev, USSR, met for talks, as reported in the daily Press.) The castle with its large staterooms stands amidst a large garden with formal cut hedges and sandstone sculpture in the style of the Versailles Palace, of which it is a copy.

The coaches then returned to the city *via* the wide "outer ring-road" which is flanked on both

Part of the stage at the opening ceremony showing, seated, some of the official representatives of the various countries comprising the International Committee. Addressing the gathering is Mr. Sans Darnis (from Spain), the Committee president.

sides by multi-storey workmen's flats, then passed the combined Southern and Eastern Railway Terminus which was completely destroyed by bombing during the 1939-45 war and recently rebuilt as one of the largest and most modern railway stations in Europe.

From here the coaches went past the baroque "Belvedere Castle" and the Russian army's war memorial, on the Schwarzenberg Place, which the Russian army of occupation had renamed "Stalin Place." When the Russians finally left in 1955, the Austrians tactfully left the war memorial standing, but the historic place had its original name restored (just as practically all place or bridge names are now known under their old names). Passing on, the famous St. Charles Church with its green copper cupola became visible, one of the most beautiful examples of the art of church building of the early 18th century.

Then the coaches followed the inner ring-road —the *Ringstrasse*—which abounds in such famous buildings as the State Opera House, the Parliament and the Town Hall. The *Ringstrasse* is flanked by several parks, in nearly all of which monuments of classic Austrian composers (*e.g.* Mozart, and Haydn) are erected, the most beautiful being the one dedicated to the creator of the Viennese waltz—the Johann Strauss monument in the "Stadtpark." The tour next went to the "Prater," one of the city's open-air spaces, part of which is devoted to popular amusement, and incorporates a giant 'Wheel," a Lilliput railway and numerous merry-go-rounds, favourites of all Viennese. Then the coaches went up the slopes of the softly shaped hills which surround the metropolis with a wreath of woods and vineyards. The modern road leads up in numerous bends to the "Kobenzlo" (in winter a famous ski-jumping rendezvous) and the "Kahlenberg," the latter being a 1,500-ft. high wooded hill forming the city's northern boundary. From the terrace of the Kahlenberg restaurant, the visitors enjoyed a panorama of the city and along the Danube far into the foothills of the Alps—the "Vienna Woods."

Viennese Heuriger

The coach tour ended with a visit to a *Heuriger* wine-tavern (*Heuriger* means this-year's wine) in one of the many wine-growing suburbs of Vienna (Grinzing, Nüssdorf and Kassgraben). Here, the parties were able to sit in the open and get better acquainted with one another, drinking local wine and listening to string and zither music in an atmosphere of Austrian *Gemütlichkeit*, a word which cannot be translated but comprises a mixture of cosiness, goodnaturedness and joviality.

Oddly enough, the drinking part is of quite secondary importance to the Austrians, who do not drink as much as one might think at first sight of the crowded taverns, of which there is such a great number everywhere. The Austrian and particularly the Viennese is happiest when he sits down and talks with his family and his friends. A point of behaviour that makes Austrians different from British or Americans is that they sit when they drink whereas the English-speaking nationals usually stand at the bar. The evening therefore really began when the Austrian foundrymen and foundrymen of other nationalities sat down together, each having a glass of wine—or two—and soon they talked freely, somehow finding a common language. Outside the wine tavern was a police notice: "If you go to a *Heuriger* remember that the wine you drink, however good it may taste, renders you punishable in the eyes of the law if you drive a motor vehicle." Thus it was a convenient and comforting thought that the coaches were waiting outside all the time to bring the visitors safely back to their hotels.

Continuing the tour, without any further lengthy stopping, the coaches made their way through the Grinzing area of Vienna to high wooded ground at the north overlooking the city, from which after a short pause for further light refreshment they returned to the Grinzing area for *Heuriger* evening. This may be described as a new-wine sampling ceremony accompanied by music and dancing at establishments run by the local vintners. It appears that each year's wine-harvest can be sampled on the vintner's premises of Vienna (which are situated mainly in the Grinzing area) and this forms quite a pleasant feature of Viennese recreational life, which is revived with each year's new vintage.

Many of the Congress delegates found this new wine a little deceptive in its potency, but all were agreed that the *Heuriger* was a most entertaining evening; it provided an ideal opportunity for delegates to meet with one another and renew previous acquaintances in an informal atmosphere. The last coaches returned to Vienna at about 11 p.m., all the participants feeling that in the first day—though it had been quite strenuous—the Congress had really got into its stride.

Further Technical Sessions

As previously mentioned, the whole "business part" of Tuesday's programme was devoted to technical sessions and these were on the whole remarkably well attended, despite some fatigue (partly occasioned by the extreme heat of the day) towards the end of the late afternoon's sitting, which concluded at 6.15 p.m. after a total session time that day of 7½ hours. During this period, no fewer than 18 papers were presented and discussed in the two simultaneous sessions in the same rooms as previously. Although it made a strenuous day, most of the delegates were in accord with the writer in applauding the organizers for arranging such concentrated technical sessions and thus disposing of the most serious part of the Congress in almost continuous sessions.

The remaining eight papers of the Congress were presented on the following morning, Wednesday, again commencing at 8.30 a.m. but concluding at noon. (Brief synopses, abstracts and notes on some of the discussions of the papers presented will be included in a later section of this report.)

Close view of some of the people attending the opening ceremony. Facing the camera (foreground) is Dr. O. P. Einerl (IBF Southampton section secretary), who was born in Austria and so proved very helpful to English-speaking Congress delegates.

The large number of delegates and ladies who attended a performance in the Vienna State Opera House on Tuesday evening saw a performance of "Elektra" by Richard Strauss, by the Vienna State Opera Company and Orchestra. The theme wasn't everybody's idea of light recreation for such a party, but general comment was that the opera was magnificently produced and executed. Although in Vienna one would perhaps have preferred Johann Strauss, the performers and performance were stated to be excellent, both the orchestra and individuals putting their best into this rather depressing tragedy.

WORKS VISITS

The works visits of the Congress were spread over 1½ days, that is Wednesday afternoon and all day Thursday. No fewer than 22 establishments* had issued invitations, several of them being visited by more than one party. In general, the whole programme was carried through with admirable precision; practically all the firms offered hospitality of one sort or another, either on arrival of the parties, at luncheon, or for an early evening meal and refreshment before departure. The writer on the Wednesday afternoon participated in one of the few visits to non-ferrous foundries and was admirably entertained at the premises of F. Zimmermann & Sons, situated in Vienna itself. The following day, he made a lengthy trip along with several other coachloads of delegates to see the foundries of Steyr-Daimler-Puch at Steyr, near Linz. This proved a most strenuous outing with a quite late return, but was from all points of view very well worthwhile.

F. Zimmermann & Sons

Executives of Franz Zimmermann & Sons initially made available to the writer the following facts about the firm's history and present-day set-up: At the beginning of this century F. Zimmermann with his sons Karl and Alois founded the firm bearing their name. They all had been practical foundrymen since their earliest youth and careful work and their unstinting application made it soon possible to obtain orders from an increasing number of customers who required high-quality castings. Their modest shop soon became a factory and after the first world war, motor-car and aircraft components were in increasing demand and particularly aluminium and its alloys enlarged the firm's field of application. The production included hand- and machine-moulded aluminium castings, many of them for engines of simple or complicated design, as well as larger aluminium castings for diesel train engines, weighing up to 14 cwts. each making a total output of thousands of tons of aluminium castings between the end of the first world war and to-day.

The non-ferrous foundry is now housed in a large shop with modern furnaces, compressed-air-operated moulding machines, a shot-blasting plant and an acid pickling-bath. Copper-base alloy castings in weight up to two tons each are being produced, including those in high-tensile material. Production is strictly controlled and castings are inspected before delivery for dimensional accuracy, quality and finish. Tensile tests are carried out in a well-equipped mechanical test-house and non-destructive tests are frequently employed. Sample castings, prototype castings and samples taken at random from runs of repetition work are sent to the X-ray department for testing.

A hot-pressing department was added in 1952 and there is also a non-ferrous drop-forging section. Despite mechanization, the professional skill of moulder/craftsmen is still held to be of decisive importance. Although none of the foremen who worked with the founders of the firm is still alive a grandson of the founders, Mr. Alois Zimmermann who served his time and also gained engineering qualifications has managed the firm since the year 1936.

The shops visited by the writer were typical of many other light-alloy and non-ferrous founders, both in this country and other parts of Europe, although there was perhaps less attention to good-housekeeping (in the way of clear gangways, clean walls and good ventilation) than is nowadays the rule in the United Kingdom. Moulding machines were in use, each with their own sand supply and in the first aluminium foundry visited, a Sklenar

* Many of these works were comprehensively reviewed in the JOURNALS of June 1 and June 8, 1961.

Congress and Austrian State dignitaries about to take their places at the opening session. From left to right are Dr. Loibl (secretary to the Austrian president), Prof. Sans Darnis (president, International Committee), Dr. Adolf Scharf (president of the Austrian Republic), Dip.Ing. Josef Krammel (president of the Congress), and Dr. Franz Sigut (Congress director and secretary).

250-lb. furnace and another large crucible furnace of similar capacity were used for bulk melting of the metal. These were supplemented by a number of pit-type oil-fired crucible furnaces, each carrying two pots of metal (about 100-lb. each). Notable was the use of crucibles manufactured by the Morgan Crucible Company and the employment of fluxes coloured for identification purposes according to the metal being treated. The sand plant here was a batch-type BMD unit and a natural sand with bentonite additions was employed, facing sand being used for practically all moulds. For heat-treatment of aluminium castings, there was a Siemens pit-type resistance-heated furnace of about 6-ft. dia., mainly used for artificial ageing and in conjunction with this, a water-quenching tank was available. Also in this aluminium section, the smaller moulds from machines were mainly stored on roller conveyors prior to casting and here a particularly-useful idea was the location of a lift-type manually-operated platform truck at the end of a roller conveyor for taking away two or three moulds at a time to the knock-out. Most of the box-parts were of rolled-steel construction and carried an unusual design of rolled-steel U-shaped lug perforated to take the box-pins.

The visiting party were mainly of French or German speaking nationals with only three English-speaking delegates amongst them and unfortunately interpreting for the latter was not very well catered for. However, it was gathered that about 100 to 120 are employed in these foundries and that about 15 tons of aluminium castings, mainly in silicon alloy, are now produced monthly, together with 8 to 10 tons of copper-base castings.

Ancillary departments included a well-equipped test-house, both for sand testing (Georg Fischer equipment) and mechanical testing of samples. A number of plaster-oddside patterns were in use and some full plaster patterns, but there were also employed a fair number of metal patterns and metal-reinforced wooden patterns. Notable in the pouring section was what looked like a home-constructed three-wheeled trolley for carrying crucibles of metal, the ladle bow being supported on spring-loaded trunnions. This appeared to be a very safe and convenient method of metal transport.

In the coremaking section, CO_2 techniques were being employed on a fairly extensive scale, but there was also a batch-type coreoven. Repetition cores of quite fair size were being produced in CO_2 sand on a Vogel and Schemmann vertical blower, for example, small valve-body cores of considerable complexity, women coremakers being employed. Noted in the CO_2 section was a cunning little electric-heater attached to the CO_2 cylinder valve for preventing icing-up. There was also a new model H 25 Roper Hansberg core-blower/turnover machine but this had obviously been newly purchased and was not yet in use.

Other Sections

Passing on, the writer visited showers and locker-rooms and then another section of the foundry, this one mainly devoted to smallish valve and tap castings in copper-base alloys. Here was another battery of pit-type pot furnaces and CO_2 bench moulding was mainly employed, associated with "book-type" mould-assembly and clamping for pouring. It was noted that this section was staffed by fairly young operators and apparently there is here no great employment problem. The firm makes up its own alloys for the copper-base work, mainly from scrap copper, purchased scrap and ingot metal additions. Some weld rectification of bronze castings by oxyacetylene was being practiced.

Continuing into one of the pressure-die-casting shops, an interesting unit was an Idra pressure-die-casting machine being used to produce copper-base die-castings of about 2 to 3 lb. slug weight

Dr. H. T. Angus (British Cast Iron Research Association) addressing the meeting on Monday of the International Committee for Testing Cast Iron, of which he is the chairman.

on an automatic cycle, the production rate being quoted as 600 cycles per day for brass and 800 for aluminium. The machine was of the toggle-press type for which a locking pressure of 6,000 kg. per sq. mm. and an injection pressure of 1,800 kg. were quoted. It was notable that this machine was operating without a guard. In connection with safety, the use of the side of a cutting-off wheel for trimming the blades of an impeller-type casting was a practice observed here which it is thought, would be viewed with considerable disfavour by the UK Factory Inspectorate. Other sections of the works visited were producing gravity-die-castings in copper-base alloys for taps and faucets. These were made from very simple dies, employing a sand core. There was also a hot-brass-stamping section.

At the conclusion of the tour, the visitors were taken by the guides to a neighbouring hostelry, where a light meal was partaken of, together with liquid refreshments, ending with champagne toasts to both visitors and hosts.

[A description of the second works visit in which the writer participated will be recorded in a future section of the "Diary."]

SOCIAL EVENTS

The writer's return from the visit to the Steyr-Daimler-Puch works on the Wednesday of Congress week was unfortunately too late for him to participate in the reception that evening of the official delegates to the Congress (normally two persons per country) by the Mayor of Vienna. By all accounts, this was a quite brief, but very pleasing, ceremony at which the delegates were received in person and entertained to cocktails and other refreshment in the new reception room of the Vienna Town Hall. Also present were other civic dignitaries of the City.

Banquet and Ball

The final and crowning social event of the Vienna Congress week was the banquet on the last evening held in the large *festsaal* of the Hofburg and three connected rooms—for this purpose converted from lecture-rooms. Here 1,200 delegates, ladies and guests were seated at well-arranged long tables under the crystal chandeliers of the old Imperial Palace and were served speedily by 160 waiters whose work was directed by coloured light signals.*

During the progress of the dinner, the light of the chandeliers was dimmed and a group of waiters, dressed in "foundry style" with helmets, goggles and with their faces blackened, trundled three-wheel bogies into the halls. These carried foundry ladles filled in turn with ice blocks amongst which stood bottles of wine and champagne. It was no accident that the sparkling white wine (grown in the Danube valley of the "Wachau") which had been selected for the banquet, bore the lable: *Kremserschmidt aus der Sandgrube* (sand pit), just as Haydn's "fire" symphony had been chosen as music for the opening ceremony. As another surprise feature, sparkler-type fireworks were attached to some of the ladles; when ignited it appeared as if dozens of exothermic feeder-sleeves were starting to act or as if iron was being treated with magnesium, giving a novel lighting effect and a (pungent) foundry atmosphere to the banquet scene.

After the banquet, all guests moved to the large marble hall which was cleared for the ball. Whilst this was being done, an ensemble of eight pairs of soloist ballet-dancers from the Vienna State Opera Ballet gave a charming performance of classical ballet dancing, accompanied by waltzes played by an orchestra located on a balcony above the assembly.

At the banquet, Dr. Krammel, the president of the Austrian Congress organizing committee, addressed the gathering over loudspeakers (speaking

* When a certain coloured light appeared this meant that a corresponding section of waiters could fetch the various courses of the dinner. Light signals also operated in the banquet hall. Green indicated that "serving" of the guests, "white" that empty plates should be removed and "red" that the waiters had to leave the banquet hall, when speeches were about to be made.

in turn in three languages) pointing out that Vienna, since the regaining of Austria's independence in 1955, had become an international Congress meeting place on account of its geographical position, its tradition and its wellknown hospitality. He referred to the famous "Vienna Congress" of 1815 after Napoleon's final defeat, when kings and princes met in Vienna in an attempt to rearrange Europe's affairs and when the witty Prince de Ligne had coined the much-quoted saying: "The Congress proceeds, but it does not progress."

In contrast to this historic Congress of the European nobility, he said, the present Congress held by Europe's technical foundry "aristocracy" had in a short week shown an immense amount of progress. However, work being over for the time being, he was pleased to invite all members and ladies to enjoy themselves during the ball in the magnificent halls so that it could be said again: "The Congress dances." Finally, Dr. Krammel expressed the hope that delegates and their ladies would take pleasant memories back home and would revisit Vienna and Austria in years to come.

Closing Ceremony

Only about 150 delegates attended the short closing ceremony on Saturday morning, because the dancing had continued until the small hours of the same morning and nearly everyone was preparing for an early departure, or for the post-Congress tours.

Instead of an array of presidents of the various participating countries each with his flag behind him, making up the impressive picture which had characterized the opening ceremony, only a bare table, with four persons sitting behind it, stood in the hall, surrounded by a semi-circle of chairs for the audience. There was also no simultaneous translation. The four on the platform representing the International Committee of Foundry Technical Associations, were Prof. Sans Darnis (Spain) the president, Mr. R. Doat (Belgium) vice-president, Mr. Vuilleumier (Switzerland) treasurer and Dr. Müller as secretary.

The president reviewed (in French) the work done during the Congress week by the various international Committees and announced the fact that the 29th International Foundry Congress would be held in the USA (Detroit) in May, 1962, and the 30th Congress in Czechoslovakia (Prague) in September, 1963.

Mr. Doat then thanked Dr. Krammel, the Austrian president of the Congress for the excellent organizing work the small band of Austrian volunteers had done. That Austria was a small country with fewer than seven million inhabitants and had a foundry industry mostly situated outside Vienna and many miles away from it, were facts which made the task of organizing a Congress of that size still more difficult, he said.

Dr. Krammel thanked him for those words of praise which would please all those who had co-operated so enthusiastically with him and particularly mentioned the tireless efforts "behind the scene" which had been in the capable hands of

Scenes at the non-ferrous foundry of Franz Zimmermann & Sons of Vienna. In the right-hand photograph, Mr. H. C. G. Wilson (Midland Metallics, Limited) (right) and Mr. R. Blandy (Slough) watch pouring of aluminium castings on a roller conveyor. At the end of the conveyor is located an elevating platform-truck for taking moulds (two or three at a time) to the knockout. The second illustration shows in the foreground a three-wheel bogie for carrying crucibles of molten metal on spring-loaded trunnions.

Vienna Diary

Dr. Sigut, the secretary of the Austrian Foundrymen's Technical Association.

He then wished all delegates a hearty "au revoir" and declared the 28th International Foundry Congress as closed. The delegates rose from their seats, showed their appreciation by a lively applause and then went down the flight of marble stairs to where a last official photograph was taken.

(To be continued)

English Steel Corporation's Projects

Two ceremonies of considerable importance, not only to the English Steel Corporation, Limited, but also to Sheffield and the British steel industry generally, took place last Friday. Viscount Knollys, chairman of Vickers, Limited, and of ESC, poured the first skip of concrete for part of the foundations of a new £26,000,000 steelworks at Tinsley Park, scheduled to be in operation by the last quarter of 1962 and, later in the day, at the River Don Works, commissioned the largest electric arc melting furnace in operation in the UK.

The Tinsley Park Works is the largest development of its kind ever undertaken within Sheffield city boundaries. Already nearly 3,000,000 tons of earth have been moved on the 500-acre site and consolidated into terraces where buildings soon to be erected will house electric arc melting furnaces and blooming, billet, and bar mills. With this additional melting capacity English Steel's production of alloy and special carbon steel will be increased to nearly 1,000,000 ingot tons a year and billet and bar production will be trebled.

Performing the rather unusual inaugural ceremony, Lord Knollys recalled that it was more than 100 years ago that Vickers and Cammells began making steel in Sheffield and their rescendent, English Steel, was now beginning a great new venture.

Paying tribute to his predecessor as chairman of the corporation, the late Sir Frederick Pickworth, and to his colleagues on the board for their foresight in securing the site, Lord Knollys said that it was now almost the last outpost of countryside within the Sheffield boundaries. It was disappearing—but in a great cause—that of industrial wellbeing of this country and its ability to compete in world trade.

He felt very strongly that what British industry needed most now was the greatest possible competitiveness, through the most modern plant, the newest methods, the most competitive prices, and the finest workmanship. ESC was providing at Tinsley the most up-to-date plant with its two 100-ton electric furnaces, 42-in. blooming mill, two 32-in. billet mills and bar mills and of a size to give the best economic results. The plant would increase ESC production of alloy and special carbon steels to nearly 1,000,000 tons a year. This had been done to replace obsolete plant, to be able to meet increasing demand for their products—in other words, to ensure that they remained competitive.

The new Tinsley Park rolling malls were scheduled to begin operation by the end of 1962. "I believe that the reputation of ESC, of all the contractors concerned, and indeed of British industry abroad, would be strikingly enhanced if the scheme were to be completed and the plant in operation not merely on time according to the programme but even before the planned date. Such a thing has been done," said Lord Knollys.

80-ton Arc-furnace

Later, about a mile away at the River Don Works, Lord Knollys commisioned the 80-ton electric arc furnace, installed, he said, in order to produce large electric steel ingots of improved quality to meet increasingly stringent specifications. Improved deliveries would be possible because of the shortened heat treatment times required for vacuum treated steel as compared with steel cast by conventional methods. The furnace, which can melt 80 tons of steel in only three hours, has been designed for the production of special alloy steels and, in particular, for casting in vacuum. Working in conjunction with other melting furnaces it will enable English Steel to produce hydrogen-free ingots of up to 180 tons—greatly superior to those cast in air.

Mr. George P. Tinker (chairman of Birlec-Efco (Melting), Limited, which supplied the new plant, said that his firm's association with English Steel dated back for more than 30 years. During that period the two founder members of Birlefco had supplied the whole of English Steel's arc melting equipment which amounted to a total of 15 furnaces. The present furnace was the largest in operation in this country, and, he believed, the largest in the Commonwealth. Birlefco had been entrusted with the order for two further arc furnaces for the new Tinsley Park works.

Institution of Production Engineers

Summer School

The Inter-relation of Work-study, Ergonomics, Operational Research and Cybernetics and the Application to Production Engineering will be the theme of the Summer School of the Institution of Production Engineers to be held at the College of Aeronautics, Cranfield, from August 29 to September 1. The lectures, in the mornings and on two evenings, will be given by Dr. J. E. Faraday (Imperial Chemical Industries, Limited); Mr. J. Murdoch and Mr. J. Singleton (College of Aeronautics, Cranfield); Mr. G. P. Wade (Engineering and Allied Employers West of England Association); Dr. E. Edwards (College of Advanced Technology, Loughborough); Mr. A. E. De Barr (Machine Tool Industry Research Association) and Dr. T. Lupton (College of Advanced Technology, Birmingham). For the afternoons, Professor J. Loxham and Mr. Seymour Hills are arranging demonstrations in their laboratories. The fee for the School, which will also cover accommodation, meals and gratuities, is 10 guineas. Early application to the Press Officer of the Institution, 10, Chesterfield Street, Mayfair, London, W.1, is advisable as the number of places is limited to 120.

Busary replaces Schofield Travel Scholarship

The Institution also announces that the Schofield Travel Scholarship is being replaced by a bursary of £600 per annum, tenable at a UK university for post-graduate studies in production engineering. The figure includes fees and the bursary will be tenable for the first time for September-October, 1962, entrants. It is required that applicants must (*a*) hold a first degree in engineering or a diploma in technology (eng.); (*b*) have fully discussed his proposed course or work with the university of his choice, and (*c*) to have been accepted by the university. Further details of the bursary, giving procedure to be adapted by applicants, will be published later in the year.

Reducing Metal Losses in a Brass Foundry*

By H. St. John

A spotlight is directed onto the stages in brassfoundry production where losses occur whose cumulative effect, if unchecked, can be quite considerable. Useful ceiling values are suggested that mark the upper limits for "healthy" metal loss.

Because of increasing costs and more-or-less rapid adoption of improvements in foundry technology, competition in the industry has become increasingly severe. New materials and new methods have brought on to the market products designed to replace castings. Against this competition, castings have lost much ground, some of it unavoidable, but much of it due to failure of foundries to make the most of their opportunities. Taking advantage of opportunities and fighting competition does not always require new equipment, new production methods, or even a monetary outlay of any proportion. There are some things that almost any foundry can do, without heavy investment, to decrease its material and labour costs and thus increase its competitive advantage.

Keeping Records

Few brass foundries appear to keep good records of their use of brass and bronze alloys which are costly. Precise information is needed before intelligent steps can be taken to eliminate unnecessary losses. Data must be accumulated for at least six months, after which these data can be compared with what may be termed "best possible performance" and the places where improvements are needed will become evident. Metal waste can be classified under three main headings: Excess metal loss—metal oxidized or volatilized; non-productive metal—metal melted and poured, but which is not part of the castings sold to the customer, and rejected castings—classified separately as they involve a serious waste of labour, productive as well as non-productive. Metal waste in foundries can be controlled only if the weight of metal used at various stages of its processing is accurately known. To accomplish this, the following information must be recorded: (1) Weight of metal charged to the melting furnaces, daily or weekly; (2) gross weight of castings (good and bad) after they have been cleaned and ground, ready for machining; (3) weight of metal "pigged"; (4) weight of grindings removed from castings during preparation for machining; (5) weight of castings delivered to the machine-shop and the weight of defective castings returned to the furnaces for melting; (6) weight of machine turnings returned by the machine-shop; (7) weight of defective castings returned by the machine-shop, weighed when received, and (8) approximate weight of acceptable castings delivered to the customer after these have been machined.

Metal Melted

The accurate weight of metal melted should be known since it is the most reliable basis for calculating the efficiency of all foundry operations. Furnace charges include: (1) Purchased metal such as composition ingot, brass and bronze, scrap from outside sources, copper, tin, lead. zinc, and, sometimes, nickel; (2) gates and sprues (cleaned); (3) castings rejected because of defects; (4) "pigged" metal, and (5) machine-shop turnings. As a rule, if purchased metal is a high proportion of the total melt, the foundry can be assumed to be doing a good job, and to accomplish this, items 2, 3, 4 and 5 must be reduced to the lowest possible point.

Melting Loss

In the figures which follow, the values ascribed to different forms of metal loss should be considered "goals" which every foundry should strive to reach. In each case, the figures are based on results observed in one or more foundries. Accountants sometimes estimate the loss at the end of the year by calculating the weight of metal which cannot otherwise be accounted for. This actually includes many variables and results in a misleading evaluation, for non-productive metal has a bearing on this calculation since it suffers a loss each time it is melted.

The metal lost beyond recovery in fuel-fired melting furnaces should not exceed 3 per cent. and losses of less than 2 per cent. have been observed. In electric furnaces, losses can be held to 0.5 per cent. with the red alloys and 1.0 per cent. with yellow metal. In extreme cases, however. the melting loss may be as high as 8 per cent. Loss of metal during pouring into the moulds is appreciable and will usually run to about 0.5 per cent., and the loss during blasting should be about 0.1 per cent., but is often as high as 0.2 per cent. Another element of loss frequently overlooked is the metal thrown away with discarded moulding sand and this may amount to 0.2 or 0.3 per cent. and can be avoided if good reclamation methods are employed.

Irrecoverable Loss

Metal removed by grinding wheels may as well be considered a net loss since the grindings have little value, but their weight should not exceed

* Abstract from a Paper appearing in the April issue of *Foundry*. The Author is a foundry consultant.

1.0 per cent., but it may run in some foundries as high as 4.0 per cent. With castings whose design and volume of production permit the use of die trimming instead of grinding, the grinding loss may be eliminated entirely and much labour saved.

It is evident that some foundries may be handicapped by a net metal loss as high as 12 or 13 per cent. of the total melt, but this could be reduced to 5 or even 2 per cent., depending upon the type of melting furnaces employed.

Gating Practice

It is a natural tendency for foundry management to overcrowd the patternplate with too many castings, while the man who has to make the castings tries to "play safe" by using unnecessarily large gates, sprues and feeders. True economy must avoid both extremes. Some foundries, for example, devote as much as 40 per cent. of the total melt to sprues. gates and feeders, when 30 per cent. would be sufficient. Waste of metal by spilling and careless skimming can amount to 2 per cent. of the total melt; it should not exceed 1 per cent. No matter how careful one may be, crucibles and ladles usually contain cold metal which must be "pigged" after moulds are poured. However, if the size of the pouring vessel be adjusted to the number of moulds which can be poured, the weight of pigs can be reduced to a minimum—a maximum of 2 per cent. of the total melt as compared with the not uncommon figure of 5 per cent.

Reduction of Scrap

A statistical approach to the problem of defective casting losses is recommended. A reasonable goal is 2.5 per cent. of the total melt, divided about evenly between rough casting scrap and castings rejected after machining. A total of 6 per cent. is not uncommon, but is much too high. One of the most common excessive uses of non-productive metal has to do with the weight of metal removed during machining. This should not exceed 10 per cent. of the good rough casting weight but sometimes runs as high as 20 per cent. A foundry with a good performance up to this point may produce 60 per cent. of the total melt in the form of good castings.

Comparing two theoretical foundries, one ranking high in good practice, the other falling short, if the comparison be based on the total weight of metal melted, it is found that one produces castings which comprise more than 50 per cent. of its total melt, while the other produces below 30 per cent. Of this difference, the most serious per-pound cost is the net loss of metal which can be as low as 2.5 per lb. or as high as 12 lb. out of every 100 lb. melted. The better foundry can produce saleable castings about one-third cheaper than its less efficient competitor.

Many brass foundries could reduce their net costs 20 per cent. by paying strict attention to their metal losses and excessive use of non productive metal while better foundries might save at least 10 per cent. This saving would not involve the purchase of expensive equipment or adventures in the field of new methods. A foundry with limited financial means can postpone its decision in these matters and still remain competitive if it makes the most economical use of the equipment it already has.

Cylinder-liner and Piston-ring Wear

Readers who studied the contribution recently to the Institution of Mechanical Engineers on the subject of "Influence of Silicon in Cast Iron on Corrosive Wear" and reproduced in the JOURNALS of March 9 and April 27 will be interested in three further papers on engine wear presented later to the lubrication group and internal-combustion engines group of the Institution. They were entitled "Measurement of Piston-ring and Cylinder-liner Wear using Radioactive Tracers," by R. F. Pywell, B.SC., and S. T. Walker; "Comparison of the Wear of Small Gasoline and Diesel Laboratory Engines," by W. C. Pike, M.SC., and P. Newman; and "Investigation into Factors which affect Piston-ring Wear under Starting Conditions," by J. C. G. Cree and J. Thiery.

The first of these was entirely devoted to experimental methods and gave details of equipment and techniques used, together with calibration method and the quotation of some typical results. (Acknowledgment is made at its conclusion for co-operation the Authors enjoyed with the British Cast Iron Research Association, Inco (Mond), Limited, Hepworth & Grandage, Limited, and Wellworthy, Limited, among other firms).

The second paper describes how the Authors applied the radioactive-tracer wear-measurement technique to small laboratory engines and recorded comparative data for two engine types under various controlled running conditions. The results were analysed in relation to general considerations of corrosive and abrasive conditions in the cylinders, as influenced by the combustion process.

The third paper, for which acknowledgment is made to the British Petroleum Company and the French Institute for Petroleum, deals with the application of radio-active piston-rings to explore starting-up wear in engines, first under standard conditions and then as affected by a number of variables.

In none of these papers is much attention given to actual composition of the metal used in the tests except to place emphasis on the necessity of ensuring standardized material for testing. They do, however, show the tremendous effect of variations in engine running-conditions on corrosive wear, quite apart from considering the actual metals involved.

Mr. R. MENHENIOTT, a technical representative in the industrial branch of the Cardiff office of Holman Brothers, Limited, has been transferred to North Wales and will operate from 30 Plastirion Avenue, Prestatyn.

Equipment & Supplies

Air Filter

W. C. Holmes & Company, Limited, Turnbridge, Huddersfield, have redesigned their Trion electronic air filter and in future, it will be known as the Industrion electrical air filter. The new filter is of sturdier construction and the insulators are now positioned out of the main air-stream, facilitating cleaning. The associated electrical equipment of the filter has also been improved. A further development is the introduction of a special heavy-duty filter, intended for use on applications where the dust burden is higher than that handled by the standard filter. Heavy-duty filters are normally arranged for dry removal of the dust, the complete filter section being vibrated to dislodge the collected dust which falls into storage hoppers below the filter. With this system, it is claimed that the cleaning operation occupies only a few seconds and the filter can be immediately returned to line. A further advantage claimed is that the filter can be cleaned frequently, thus allowing a high dust-burden to be handled. The Industrion range is completed by the oil-mist precipitator which has been designed for the elimination of oil-mist and smoke emanating from high-speed cutting, grinding and machining operations.

Barrelling

Roto-Finish, Limited, Mark Road, Hemel Hempstead, Herts., have recently established a manufacturing agreement with the Ransohoff Company, of America, manufacturers of foundry barrelling equipment. A full range of this equipment will now be manufactured by Roto-Finish, Limited, and one such item is shown in Fig. 1. The equipment illustrated is used for cleaning castings and also removing sprues. Known as the wet method, the principle of the operation is that the castings are tumbled together with a large amount of "stars" which help to support the castings as they cascade within the mill and also serve partly as an abrasive medium. It is claimed that all parts of smallish castings can be reached for thorough cleaning and that excessive mill wear arising as a result of castings bumping on each other is prevented. Other advantages claimed for the equipment are that castings cleaned are free from smut and graphite and are more rust-resistant as the pores can be impregnated with a rust inhibitor. Another model of similar equipment to be manufactured in the UK is a continuous-type end-loading and -unloading mill, capable of processing 16 tons of castings per hr. and equipped with a Roto-Finish patented work-retaining collar. This collar is designed to retain a certain depth of stars and castings in the cleaning section and to feed them at a uniform rate into the star-separating section, the stars being separated from the castings and returned to the charging end by a rubber-belt conveyor.

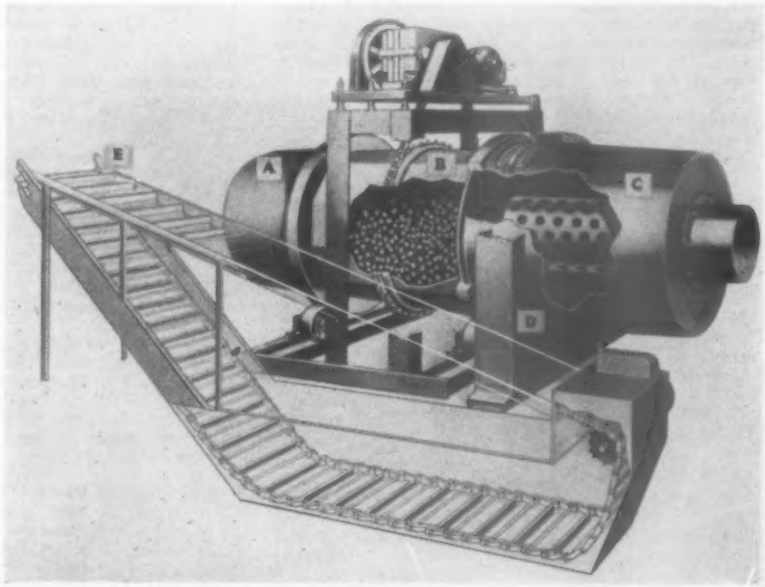


FIG. 1.—*Schematic sketch of automatic-star-return barrel mill for cleaning castings, to be manufactured in the UK by Roto-Finish, Limited.*

Key: (A) Loading cone—castings are charged into the mill either by conveyor or power loader; (B) cleaning compartment; (C) star-separating screen; (D) star-retaining cone, and (E) de-watering conveyor which continually removes sand from the tank.

Resistance Furnaces (Laboratory)

Johnson Matthey & Company, Limited, have issued a revised and enlarged series of data sheets, the 1740 series, on their range of platinum-wound electrical resistance furnaces and control units.

Also, newly introduced is an ash-fusion and controlled-atmosphere furnace, type K45F. This is primarily intended for the determination of the fusion points of coal and coke ash by the method described in BS 1016: Part 15. This furnace has an impervious alumina tube of $1\frac{7}{8}$ in. bore which projects from each end. Both ends of the alumina tube are fitted with gas sealing attachments, one with a heat-resisting glass window so that specimens can be observed and the other with a bursting disc to protect the operator in the event of an explosion in the tube. Reducing conditions can be maintained with a gas flow of less than 0.5 litres per min., and fusion determinations can be made at temperatures up to 1,400 deg. C. By removing the alumina tube, the furnace can be used for heating in air up to 1,500 deg. C. in a combustion chamber measuring $21\frac{1}{2}$-in. long by $2\frac{1}{4}$-in. internal diameter. The control unit recommended for the K45F furnace is type C8, which can be used with the firm's other furnaces, except type TK2.

The furnace is insulated in such a way that it can

Equipment and Supplies

be used on an unprotected bench-top; a platinum: rhodium/platinum thermocouple is standard equipment. Further information and sets of data sheets are obtainable free on request to the company at 73-83, Hatton Garden, London, E.C.1.

Pneumatic Saw and File

A production tool accommodating either a saw-blade or file, model CP 3017F (Fig. 2), has been introduced by the Consolidated Pneumatic Tool Company, Limited, 232, Dawes Road, London, S.W.6. The tool, which weighs 5 lb. and is 14-in. long, is operated by a unit-type "Power Vane" air-motor, the speed of the

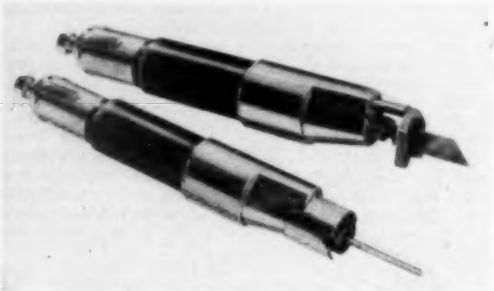


FIG. 2.—*Pneumatic tool adapted to take a saw blade or file developed by the Consolidated Pneumatic Tool Company, Limited.*

saw blade or file being 1,500 strokes per min. of length ¾ in. Controlled starting is effected by the throttle, of the graduated poppett-valve type with neoprene seating, and lubricant for the motor is supplied from an oil reservoir in the handle. To keep cuttings clear of the work, the motor exhaust air is directed downwards through the nose of the tool so as to impinge on the blade of the file. The air inlet thread size is ¼ in., and minimum hose size, $\frac{1}{16}$ in.

Level Controller for Bins

An automatic bin controller has been developed by Thomas Industrial Automation, Limited, Station Buildings, Altrincham, Cheshire, for the filling and emptying of bins, tanks and silos. It covers six bins, each of which is fitted with Leveltron high- and low-level control units, and solenoid or motorized valves for filling and emptying. A cyclic selection device in the console unit samples the signal from the high-level controllers in any desired sequence, and a similar process takes place at low level in conjunction with the emptying valves on the silos. A removable dust-proof panel fitted at the rear of the cabinet permits easy access to ancillary equipment and wiring mounted behind the main assembly panel.

Sand Aerator

In leaflet No. 165, Foundry Equipment, Limited, Leighton Buzzard, Bedfordshire, describe and illustrate a type of aerator which sits on a belt conveyor feeding the mould hoppers. The machine occupies from 10 to 12 ft. of belt length according to the output demanded from the equipment. This paddle-type machine uses a 5 to 7½ h.p. motor and handles up to 100 tons of sand per hour. Naturally the machine requires the installation of a few idlers beneath it. The twin paddles rotate in the direction of the belt and are driven from the motor by a Vee-rope drive. The machine represents a new departure in sand-aeration technique, as elevators and feed and discharge chutes are no longer necessary. The machine, which weighs only about 10 cwt., is available in five sizes with outputs ranging from 14 to 80 tons per hr.

Resin for Sand Mixtures: A phenolic resin for use in the "hot box" core-blowing process is now being produced by British Resin Products, Limited, Devonshire House, Piccadilly, London, W.1. Cellobond J.1011 is a liquid phenolic resin for making solid cores blown into a hot mould using a wet mix. In practice it has the advantage of offering foundries a single resin system. No catalyst or hardener is used, and heat alone cures the mix. It is claimed that metal/mould reaction is reduced, and the resin will not give off unpleasant odours during core-blowing.

Fans: W. G. Cannon & Sons, Limited, 38a, St. George's Drive, London, S.W.1., have introduced a new line of transportable "Man Cooler Fans," primarily designed to provide immediate relief to operators working in foundries or in close proximity to furnaces and steam-raising plants. The units are fitted with axial-flow-type impellers of cast aluminium-alloy and are powered by amply-rated totally-enclosed motors to British Standard specification. Aperture diameters of 22 in. and 18 in. are available both tripod and cradle mounted.

Oxygen Analyser: Servomex Controls, Limited, Crowborough, Sussex, have developed the type DCL 101 portable analyser for determination of oxygen in industrial gas in the range of 0 to 100 per cent. to an accuracy of plus or minus 1.0 per cent. Operation is said to be simple and as the device is linear, calibration at two points is claimed to be sufficient to standardize over the whole scale. The analyser may be used with static samples or with a continuously flowing sample at rates up to 150 ml. per min. It is 13-in. long, 8¼-in. wide, 9½-in. high and weighs 18 lb.

Ethylene Dichloride: British Hydrocarbon Chemicals Limited's large tonnage plant at Grangemouth for the manufacture of ethylene dichloride will come into operation in July/August, 1961. Commercial enquiries should be addressed to the selling agents, the Chemical Division of the Distillers Company, Limited, Devonshire House, Piccadilly, London, W.1, or to their regional sales offices. Ethylene dichloride has many solvent applications including metal degreasing.

Structural Steelwork: K. A. Ballard, Limited, Woodthorpe, Church Road, Worcester Park, Surrey, have been appointed London agents for the Clyde Structural Iron Company, Limited, of Clydeside Iron Works, Scotstoun, Glasgow, suppliers of structural steel and other platework as well as roofing, bridging, and similar components.

Photographic Paper. Kodak, Limited, Kingsway, London, W.C.2, have developed a "Panalure" grade of photographic printing paper designed to produce black-and-white prints from colour negatives with a tone rendering similar to that of prints made from negatives on panchromatic film.

British Standard for Pearlitic Malleable, (B.S.3333, 1961)

A level of quality for pearlitic-malleable iron castings and tests for ensuring that castings come up to standard are laid down in B.S.3333 just published.

The properties specified in this new British Standard can be obtained by various manufacturing techniques; the standard therefore does not stipulate any particular process. Castings are divided into two grades and requirements and tests for tensile strength, permanent-set stress, elongation and hardness are laid down for each grade. Requirements are also laid down for microstructure, workmanship and finish of castings.

The standard deals with heat-treatment of test-bars, the number to be tested and the procedure to be followed if a test-bar fails for any reason but the presence of primary graphite. Dimensions are also specified for tensile test-bars, with alternatives based on practice in several other countries. These alternatives are included to allow experience to be gained with them in the United Kingdom and to facilitate the exchange of information with other countries. Unless the purchaser wishes to inspect the castings at the manufacturer's works, manufacturers are required to provide a certificate stating that the material complies with the standard. Copies of the standard may be obtained from the British Standards Institution, Sales Branch, 2, Park Street, London, W.1; price 4s. 6d., postage extra to non-subscribers.

NIGHTINGALE ENGINEERING COMPANY—Mr. D. Boxall has been appointed a director.

United Steel purchase Barrow Steel Works

The United Steel Companies Limited, Sheffield, have paid £2,200,000 for the Barrow Steel Works, Limited, which they have managed for the Iron and Steel Holding and Realisation Agency and the Ministry of Supply since 1943. The works have not been economic as a conventional steel producing unit during that period although the profit last year before taxation was £39,195. The re-rolling mills are not in themselves uneconomic but their steel needs are not enough to support the steelmaking furnaces.

United Steel Companies are to develop a continuous casting unit, and Barrow will eventually become the first works in the world to be wholly dependent on continuously cast steel for their rolling mills. A pilot continuous casting unit was installed in 1952 and since 1954 United Steel Companies have borne the operating costs of experimental work.

The process is now working successfully and two full-scale twin-strand continuous casting machines, ogether with a 20-ton electric-arc furnace, are being installed. Production is expected to start in the near future and it is hoped this will enable the Barrow re-rolling mills to operate at a profit. The scheme has been named Barcon, from Barrow Steel Works and arc-furnace continuous casting.

VENEZUELA'S PRODUCTION OF IRON ORE in the first quarter of this year totalled 4,589,000 *tonnes*, as against 4,900,000 *tonnes* in the same period of last year.

Research Facilities at Joseph Crosfield

June 21 saw the opening by Joseph Crosfield & Sons, Limited, Warrington, of a new centre for research and technical services, covering a total area of 17,000 sq. ft. and embodying a group of seven separate laboratories, together with ancillary equipment. The centre also includes service rooms and a large central pilot-plant area, to which are added separate external auxiliary buildings to permit of specialized investigational work which is unsuitable for housing in the main block. Much of the apparatus installed is claimed to be unique, having been specially designed to the requirements of the company's various research teams and includes investigational equipment to enable radio-active tracer, X-ray, thermo-gravimetric, spectrographic and other physio-chemical techniques to be used.

The total technical, operative and administrative staff of the new centre will number nearly 200 when completely assembled. On the technical side, 37 are fully qualified at graduate or higher levels and the remainder well advanced towards full qualification. Unqualified staff are given every facility by the company to obtain their qualification by part-time study and are allowed certain periods of full attendance at neighbouring colleges and universities.

General view of Crosfield's new main laboratory, showing administration offices at the far end. The laboratory is laid out in bays, each engaged on quality-control analysis in a particular field, such as silicates, detergents, glycerines, oils and fats, or packing materials.

Personal

Mr. FRANCIS E. COLLIS has been appointed a director of F. Perkins, Limited.

Mr. H. R. BROOKER has been appointed a director and a joint managing director of Johnson Matthey & Company, Limited.

Mr. C. W. G. CROW, metallurgist of Winget, Limited, Rochester, has been appointed foundry manager of the company.

Mr. HENRY K. ROSEVEARE has been appointed to the board of James Howden & Company, Limited. Mr. HENRY L. PAUL has resigned from the board.

Conflow, Limited, Nottingham, announce that Mr. H. R. BOND, of Beverley, Yorkshire, has been appointed foundry manager as from August 14.

Mr. C. LESLIE SMITH has resigned as managing director and from the board of the Gloucester Railway Carriage & Wagon Company, Limited, and its subsidiaries.

Mr. T. CASTLE has been appointed general manager at Renfrew, Dalmuir and Dumbarton works of Babcock & Wilcox, Limited, on the retirement of Mr. D. D. CRUICKSHANK.

Mr. GEOFFREY L. GRIMWOOD, head of the electrical design department of Thomas Broadbent & Sons, Limited, Central Ironworks, Huddersfield, has been appointed a director of the company.

Mr. P. P. C. DRABBLE, production director of Geo. Salter & Company, Limited, West Bromwich spring and weighing machine makers, is retiring at the end of this month. His successor will be Mr. DAVID H. BRAMLEY.

Mr. R. B. DALES has been appointed group area manager for the East Midlands/East Anglia area of Aveling-Barford, Limited. He succeeds Mr. J. R. PULFREY, who has been appointed sales manager, earthmoving (home).

Mr. FRED BERRY, for the past 36 years chief draughtsman with Frederick Town & Sons, Limited, of Halifax, retired on June 30. For 11 years before joining Town's he was a draughtsman with William Asquith, Limited, of Halifax.

Mr. R. B. WILLIAMS has been appointed to succeed the late Mr. GUY M. CHANTREY as chairman of Jury Holloware, Limited. Mr. JOHN F. GOBLE has been appointed a director of the company. Mr. Williams will continue as managing director.

The Amalgamated Union of Foundry Workers has made Major YURI GAGARIN, the Russian space pioneer, an honorary member and presented him with a gold medal. This gesture has resulted in excellent publicity for the foundry industry at large.

Sales manager and a director of Hartley & Sugden, Limited, of Halifax, Mr. CARL L. BERRY retired on June 30 after 50 years with the company. Formerly a technical representative in Yorkshire and the North of England, he was appointed a director in 1952.

Mr. T. W. D. ABELL has been appointed managing director of William Doxford & Sons (Engineers), Limited, as from August 1. He will also be on the board of the holding company, the Doxford and Sunderland Shipbuilding and Engineering Company, Limited.

The Brockhouse Organization announces the retirement on June 30 of Mr. A. B. GOWAN, area sales manager (steel group) for the north-east England and Scottish areas. Mr. Gowan, who will continue to be available in a consultative capacity, is succeeded by Mr. R. NEWBIGIN.

At the annual general meeting of the Non-Ferrous Club Golfing Society, which followed dinner at the Welcombe Hotel, Stratford-upon-Avon, the appointment of Mr. H. T. VINEY as the golf captain was confirmed, and Mr. R. L. DEUTSCH is to continue in office as the golf secretary.

Dr. F. P. A. GARTON has been appointed a director of Brown Bayley, Limited. Mr. J. H. SHELMERDINE has been appointed a director of its subsidiary, Brown Bayley Steels, Limited. Mr. A. KILPATRICK BROWN has joined the board of the Hoffmann Manufacturing Company, Limited, another subsidiary of Brown Bayley.

Mr. ARCHIE PRESSLEY, manager of the machine-tool section of the machinery department of Thos. W. Ward, Limited, Sheffield, has retired after over 51 years' service with the company. At a special lunch to mark his retirement he was presented with an inscribed silver salver by Mr. Harold Vernon, a director of the company, on behalf of the senior staff.

Following the appointment of Mr. ALAN GREEN, M.P., as Parliamentary Secretary to the Ministry of Labour, Mr. PERCY HOLLAND has been appointed chairman of the Walmsley (Bury) Group, Limited, of Bury (Lancs). Mr. GEORGE H. SHELDON, who has been joint managing director of the group with Mr. Holland since 1959, has been appointed managing director.

Mr. G. L. PAGE has resigned as managing director of NUMAS (the National Union of Manufacturers' Advisory Service). He will continue as consultant. Mr. G. A. HUTCHESON has been appointed managing director and Mr. O. R. J. LEE an executive director. Mr. H. J. GRAY, director of the National Union of Manufacturers, has been elected to the board of NUMAS.

Mr. WILLIAM COPELAND has retired after more than 69 years in the bedstead toolroom department of Evered & Company, Limited, brassfounders, Surrey Works, Smethwick, Staffordshire. Mr. Copeland who is 85 years old started work at the age of 11, joined Evered & Company when he was 17 and was a pattern-maker for 40 years. The firm is marking his retirement with the gift of a cheque.

To mark his 40 years' service with the company, Mr. AUSTIN MORLEY, managing director of W. & T. Avery, Limited, Birmingham, has been presented with a cheque by the chairman of the company, Mr. W. L. BURROWS. Eleven employees with 50 years' service also received cheques together with 72 others for 40 years' service. Some 2,223 employees who had served the firm for 25 years have also been recognized.

Sir DONALD PERROTT has joined the board of the Patent Shaft Steel Works, Limited. He is chairman of J. A. Stirling, Limited, civil engineers, and deputy chairman of Dewrance & Company, Limited. He is also a director of United Gas Industries, Limited. Sir Donald retired as a member of the UK Atomic Energy Authority in July, 1960.

After 48 years' service with the General Electric Company, Limited, Mr. A. B. PRICE, sales manager of the company's engineering works at Erith, retired at the end of June. To mark the occasion a cheque was presented to Mr. Price, on behalf of GEC, by the general manager of the Erith Engineering Works, Dr. K. J. Wootton. Friends and colleagues of Mr. Price subscribed to a walnut cocktail cabinet.

New Premises for NSF Club

A new sports and social club, the first of its kind in the area, has been opened at Kirkland by the National Steel Foundry Company, Limited, at Leven (a subsidiary of Lake & Elliot, Limited, Braintree), for its National Steel Foundry Club, and members moved in on Friday evening, June 30. For the past eight years the Club, of 550 members, has organized its activities, including a special Christmas party for local children, from the canteen premises. In its new "home" formerly the residence of the works manager, additional facilities will be available for table-tennis, billiards, etc., and the various organizations will have their own committee rooms. Mrs. C. H. Kain, wife of the chairman and managing director of the company, in performing the opening ceremony, proposed a toast "on the house" to this unique set-up, and Mr. R. Gibson, vice-chairman of the Club, acknowledged the generosity of Mr. Kain and other directors of the company in making the Club possible. In the accompanying photograph are seen (left to right): Mr. J. Pryde, secretary of the Club, Mr. A. A. Marsh, foundry manager, Mr. R. Gibson, Club vice-chairman, Mrs. Kain and Mr. C. H. Kain, chairman and managing director of the company.

[Photograph reproduced by courtesy of A. James Price, Fife.]

Sheffield Employment

Sheffield and District Employment Committee reported on July 4 that the area had a record work total. The insured population figure was given as 287,975, an increase of nearly 8,500 on the year before. Only 1,561 were workless. This was 158 fewer than at the end of last quarter and the lowest in the city for nearly four years. There were more workers mainly in Sheffield's staple trades—steel, hand tools, cutlery and other metal trades. Unfilled vacancies were 2,277, making three jobs to every two unemployed. "So far as Sheffield is concerned," said Colonel M. W. Batchelor, chairman of the Committee, "it means that almost everyone with the exception of those who are almost completely disabled, or those who have no intention of working have a job." He went on. "We must remember that such keen competition for labour of any kind has a tendency to put wages up, and we must realize that the Government may have to introduce measures which would not be completely palatable to all of us." He referred to the recent ten per cent. increase in the price of nickel, and described it as a severe shock to the city.

Mr. R. T. Downham, the secretary, in his report, stated, "The general employment position is most satisfactory, and so far as can be ascertained this happy position seems assured for many months to come." He drew attention to the fact that "the pressure of demands for labour, particularly in the skilled categories, must inspire a serious review of training methods." The report referred to the 238 vacancies in general engineering, and stated that they are actually likely to be higher than this.

"Britain should join Common Market"

Britain cannot delay much longer entry into the European Coal and Steel Community which means entry into the Common Market, said Mr. J. O'Hagan, general secretary of the National Union of Blastfurnacemen, Ore Miners, Coke Workers, and Kindred Trades, in his report at the annual meeting of the Union at Blackpool on July 4. He said, "The world today, whether we like it or not, has been dominated by great economic powers, and Britain is no longer able by herself to command a position in the world of great economic power. Therefore, in order to meet on one hand the economic power of Russia, also the growing economic power of China, I feel it is essential that Europe has got to emerge as an economic power. It is only by uniting and reaching common agreement that Europe can achieve this objective and live in this world. We cannot escape from this, and the longer we remain outside of it the worse conditions we are likely to obtain.

"To remain outside permanently would mean, in my opinion, a gradual recession of markets to which we should have access and the gradual recession of markets for iron and steel goods, which automatically brings with it a recession in the purchasing power for all other consumers goods including agricultural products.

"There is urgent need for all sections of Britain's economy to get down to the task of looking at this from the angle, not of what is good for any particular industry, but what is going to be good for general economy of the whole industrial capacity of this country," he concluded.

Company News

MORGAN CRUCIBLE COMPANY, LIMITED—Consequent upon the reorganization of the parent into a holding company the directors propose that the accounts of all the companies in the group shall in future be made up to the end of December. In the year ended April 2, 1961, group profit, before tax, was £2,235,815 (£2,043,417). Total sales rose by 9 per cent. compared with 17½ per cent. in the previous year.

HILLS (WEST BROMWICH), LIMITED, manufacturers and engineers to the building trades—The company reports a profit of £50,294 for the 17 months to December 31, 1960, against a loss of £28,621 for the previous year. There is no ordinary dividend as before.

BIRMINGHAM RAILWAY CARRIAGE & WAGON COMPANY, LIMITED—Dividend on the £100,000 6 per cent. cumulative preference capital, due in August, is being deferred. There was no dividend on the £990,975 ordinary for 1960 when a group loss of £255,151 was incurred.

MIDLAND TAR DISTILLERS, LIMITED, Oldbury (Worcs)—In his statement on the year to March 31, 1961, the chairman, Mr. R. B. Robinson, says that projects in hand have committed the company to capital expenditure of £500,000, which is not likely to yield a full year's benefit until 1963/64. Despite the lower profit, the directors propose to repeat last year's distribution of 12½ per cent. on ordinary capital.

VILLIERS ENGINEERING COMPANY, LIMITED, manufacturers of motor-cycle and industrial petrol-engines, ferrous and non-ferrous castings, etc., of Wolverhampton (Staffs)—In his interim report, the chairman says that for the first eight months of the current year there was a fall of 25 per cent. in the turnover of the group compared with the corresponding period last year and the monthly turnover has not yet recovered to a satisfactory level. Consequently, the results for the full year cannot be expected to show a profit.

WHESSOE, LIMITED, designers and builders of plant for oil, atomic power, gas and chemical industries, of Darlington (Co. Durham)—With intense competition persisting at home and abroad, the majority of orders still have to be taken with a very bare margin and it must be expected that for the time being profits will continue to decline, says the chairman, Mr. C. M. Spielman. It is expected, however, that when the full benefits of the reorganization and expansion policy are realized, there will be a resumption of the upward trend.

HATTERSLEY (ORMSKIRK) LIMITED, engineers, iron and non-ferrous founders, of Ormskirk (Lancs)—With a good order-book and given freedom from political or industrial strife, Mr. H. C. Nicholson, the chairman, hopes for improved results in the current year. Despite teething troubles of the new mechanized foundry and a scarcity of labour, both of which are being overcome, deliveries last year rose by 16 per cent. Selling prices had to be increased in view of increased costs, Mr. Nicholson says, but not to the extent which would have been necessary to maintain profit margins previously enjoyed. Direct export sales also increased.

DELTA METAL COMPANY, LIMITED—The offer for Davis & Timmins, Limited, manufacturers of automatic screw machine products, of London, E.17, has now been extended to the preference shares in the event of the offer for the ordinary shares becoming unconditional. The basis of the offer would be six 6 per cent. cumulative £1 preference shares in Delta for every five 6½ per cent. cumulative preference shares in Davis & Timmins. The board of the latter company considers this basis of exchange a fair one which can be recommended for acceptance if and when received.

RHODESIAN IRON & STEEL COMPANY, LIMITED—Mr. W. E. Geerling, chairman of the company, in which the Lancashire Steel Corporation, Limited, has a financial interest, reports a loss of £142,000 sterling in 1960. The loss is after provision of £391,000 for depreciation and accrued but unpaid interest on the Southern Government's second debenture stock. The accumulated loss now totals £300,000. In terms of the agreement signed when the company was taken over from the Government by private enterprise four years ago, the Government's unpaid interest is converted into additional second debenture stock at par.

New Patents

(Copies of complete specifications are obtainable from the Patent Office, Sales Branch, 25, Southampton Buildings, Chancery Lane, London, W.C.2, price 3s. 6d.)

842,588. H. J. Daussan, 9 Avenue Leclerc de Hautecloque, Metz, Moselle, France.

The casting in ingot moulds, ferrous compounds—notably effervescent and killed steels. A sheath is provided for covering the pouring jet. This sheath is made of any of a number of metals mentioned in the Patent; it is destroyed upon contact with the molten-metal bath.

845,172. Herman Pneumatic Machine Company, Union Bank Building, Pittsburgh, Penna, USA.

Foundry mould-squeezing machines—in particular for partially-formed foundry moulds made of finely-divided mould-forming material (such as sand). Portions of the mould-forming material are squeezed against the pattern at various areas of the pattern. The separate squeezing actions are positively effected by independently controllable fluid pressure means whereby to promote optimum distribution and compression of the material in the flask.

845,245/6. Bakelite, Limited, 12-18, Grosvenor Gardens, London, S.W.1.

Methods of casting steel using shell moulds and cores, which, it is stated, are intended to provide a better surface smoothness of the castings. In Patent **845,245,** a deoxidant is introduced into the shell-moulding composition, prior to the hardening of the shell mould, either distributed throughout the composition or present mainly on the surface. The deoxidant may be aluminium, manganese, boron, or titanium. In Patent **845,246,** the company has made claims for a layer of resin which is applied to the interior surface of a shell mould to render greater smoothness. To a hot pattern is applied first a surface layer comprising thermoplastic novalak resin, and second a backing layer of phenolic thermosetting resin. These two layers are allowed to cohere at an elevated temperature to form a thermoset structure which is then removed from the pattern.

845,332. F. W. Berk & Company, Limited, Berk House, Portman Square, London, W.1.

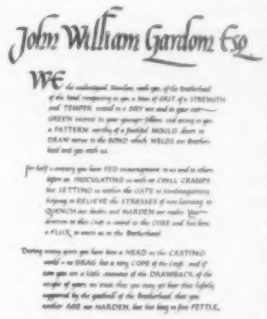
Improvements in sand moulds made by the CO_2 Process. The addition of a small proportion of finely-divided sepiolite or polygorskite clay to the mould composition is claimed to give a very much lower residual strength which gives very much easier knock-out.

John W. Gardom, Guest of Honour

An unusual, not to say unique, reunion took place at Derby on June 23, when 11 men assembled to entertain at dinner another man who at sometime in the past has helped each of them forward in this career, most of them having at some time been members of his staff. The guest of honour was Mr. John W. Gardom, head of the firm of foundry consultants, John Gardom & Company, Ripley, near Derby. His hosts were: Mr. L. W. Bolton (Morris Motors, Limited), Mr. J. Bolton (British Steel Founders' Association), Mr. D. Brown (Bonnington Castings, Limited), Mr. P. A. Davenport (Anti-Attrition Metal Company, Limited), Mr. J. Hill (Ley's Malleable Castings Company, Limited), Mr. J. D. Hill (British Cast Iron Research Association), Mr. R. F. Horton (Samuel Osborn & Company, Limited), Mr. H. Paton Miller (Thomas Allan & Sons, Limited), Mr. E. Noble (Brown & Tawse Tubes, Limited), Mr. O. Pollock (Chesterfield Tube Company), Mr. L. E. Turner (Balbardie, Limited), Mr. J. A. Wilkins (Stanton Ironworks Company, Limited), and Mr. R. Yeoman (James Hodgkinson (Salford), Limited). Mr. Brown and Mr. Yeoman were unfortunately prevented by business trips abroad from being present in person. Mr. Gardom was accompanied by his son, Mr. J. D. Gardom.

Presentation

During the course of the evening Mr. Gardom was presented with a silver tankard inscribed with the signatures of his hosts and with an address on vellum as mementos of the occasion. His hosts were, however, at pains to point out that their tribute to Mr. Gardom lay not in these presentations, but in the occasion itself: for it was conceived as an entirely spontaneous gesture; it marked no historical event or anniversary; it was associated with no particular business connection; but was purely indicative of the personal regard in which Mr. Gardom is held by a group of his former associates who are now located in various branches of the founding industry and allied organizations, in widely separated parts of the country.


John William Gardom Esq

We the undersigned, members with you of the Brotherhood of the Sand, recognizing in you a man of GRIT, of a STRENGTH and TEMPER suited to a DRY wit and to your ever-GREEN interest in your younger fellows, and seeing in you a PATTERN worthy of a faithful MOULD, desire to DRAW notice to the BOND which WELDS our Brotherhood and you with us.

For half a century you have FED encouragement to us and to others before us, INOCULATING us with no CHILL CRAMPS, but SETTING us within the GATE to sandmagistracy, helping to RELIEVE the STRESSES of new learning, to QUENCH our doubts and HARDEN our resolve. Your devotion to this craft is sound to the CORE and has been a FLUX to unite us in the Brotherhood.

During many years you have been a HEAD in the CASTING world—no DRAG, but a very COPE of the craft, and if now you are a little conscious of the DRAWBACK of the weight of years, we trust that you may yet bear that lightly, supported by the goodwill of the Brotherhood, that you neither AGE nor HARDEN, but live long in fine FETTLE.

(Signatures Appended.)

FURTHER STEP in the expansion plans of the Charles Churchill & Company, Limited, group is marked by the purchase of Henry Milnes, Limited, manufacturers of boring machines, lathes, and other machine tools, of Bradford. The existing management of Henry Milnes will continue in office.

Presentation of an inscribed silver tankard and congratulatory address on vellum to Mr. John W. Gardom by former colleagues, all of them prominent in the UK foundry industry. The occasion was a dinner in Derby at which his former associates were hosts.

[Courtesy, *Derby Evening Telegraph*]

American Letter

World Trade in Machine-tools

A study has been made by the Business and Defence Services Administration, US Department of Commerce, on world trade in machine-tools, with a view to showing the volume and trends in demand, the position of the US and other world suppliers and the principal markets for these. The study discloses that world trade in machine-tools increased by 40 per cent. between 1955 and 1958, but the US share of the market fell, cutting-tool exports suffering most. The American share of the world market fell from 29 to 27 per cent. In contrast, the world market for US-made forming tools showed gains, and as a result, by 1959, these made up 44 per cent. of US machine-tool exports, compared with 30 per cent. in 1955. West Germany and the US far outdistanced all other suppliers to the world export market in the 1955-1958 period. The United Kingdom ranked third (contributing about 12 per cent.) and Switzerland was fourth with about 9 per cent. The remaining 20 per cent. was supplied (in order of rank) by Czechoslovakia, Italy, France, Sweden, the Soviet Union, Belgium-Luxembourg, the Netherlands, Denmark and Japan. West Germany, Italy, Sweden, Czechoslovakia and the USSR substantially increased their world market share. Other exporting countries, including the US, either showed little change or suffered losses.

Foundry Conference

Pennsylvania State University, University Park, Pennsylvania, US, held its third biennial foundry conference from June 22 to 24. The technical sessions commenced on the afternoon of the first day and were divided into three sections held simultaneously and covering grey and malleable iron, non-ferrous alloys and steel. In the session devoted to grey and malleable iron, the proceedings opened by the showing of three sound filmstrips entitled "What is Grey Iron?", "Properties of Grey Iron" and "Properties of Ductile and High-alloy Irons." These were followed by a paper on "Control Tests for Grey-iron Production" by Mr. D. E. Krause (of Grey Iron Research Institute, Inc.) and one under the title "Basic Sand Control—Control of Mould Quality and Mouldability" by Mr. H. W. Dietert (of Harry W. Dietert Company). Papers presented in the session dealing with non-ferrous alloys were "Ways and Means of Improving Physical Properties of Copper and Aluminium Castings by Grain Refinement, Degassing and Feeding," by D. E. Wyman (of Exomet, Inc.); "Effects of Treating Molten Metals with Various Chemicals and Results on Casting Quality and Structure" by Mr. J. Morgan (of Foundry Services, Inc.), and "What's Wrong with Copper-alloy Castings?", by Mr. H. F. Scobie (of Non Ferrous Founders' Society). In the session dealing with steel, technical contributions were "Coremaking and Moulding with Furans," by Mr. R. J. Mulligan (of Archer-Daniels-Midland Company); "Melting and Deoxidation Practices pertaining to the Foundry," by Mr. R. A. Frost (of Vanadium Corporation of America), and "Polymeric Sand Additive," by Mr. R. D. Green (of Dow Chemical Company).

Grey and Malleable Iron

Technical sessions were continued on the Friday, three simultaneous sections being held as on the previous day. Under the heading of "Grey and Malleable Iron," three papers were given. These were "Quality Cast Iron—a Critical Appraisal," by Mr. W. H. Moore (of Meehanite Metal Corporation); "Pearlitic Malleable—a Metal of Many Uses," by Mr. H. J. Heine (of Malleable Founders' Society), and "Non-destructive Testing—its Application to Malleable and Grey-iron Castings," by Mr. H. Giudici (of American Chain & Cable Company). In the sessions devoted to non-ferrous alloys, Mr. J. D. Allen (of Federated Metals) presented a paper on "Simplified Approach to Brass and Bronze Castings," and Mr. D. L. LaVelle (American Smelting & Refining Company) gave his paper entitled "Simplified Approach to Better Aluminium Castings." Three technical contributions were given in the session on steel as follow:—"Feeding and Padding with Mouldable Exothermics," by Mr. D. Beath (of Foundry Services Inc.); "Advances in Magnetic-particle Techniques for Steel Castings," by Mr. K. Schroeder (Magnaflux Corporation), and "Resin-coated Sand and its Fundamentals," by Mr. F. W. Lees (of Hooker Chemical Corporation).

Sand Sessions

On the afternoon of the Friday also, there was a panel discussion on "Sand and Sand Properties" and this was followed by a paper on "Carbon Sand" by Mr. E. G. Gentry (of Humble Oil & Refining Company). The final session of the Conference was held on the Saturday morning when Mr. S. B. (Cy) Donner (of Donegal Steel Foundry Company), Mr. J. O. Ochsner (of Crouse-Hinds Company), and Mr. J. J. Silk (of American Foundrymen's Society) dealt jointly with the subject of "Sand and Binder Control." The final technical contribution was given by Mr. W. Richards, Jr. (of Deynor Corporation) on "Wetting Agents in Sand."

New Factory for Moorwoods

Mr. Tom C. Firth, chairman of Moorwoods, Limited, subsidiary of the Brightside group, Sheffield, speaking of expansion plans at a meeting of over 200 of the firm's employees, said that development on the firm's present site in Harleston Street, Sheffield, will provide new premises of 85,000 sq. ft. enabling production of 50 per cent. more catering equipment. Manufacture has previously been "tailor-made" but Mr. Firth stated that the new factory will bring in line production. He said, "Batch production will be practised extensively, and in cases where we are asked to supply 'specials' these will, wherever possible, be constructed from standard components." He added, "We are going to be able to produce a better job cheaper."

The new development follows the establishment of Moorwood-Vulcan, Limited, by Moorwoods and the American Vulcan-Mart Corporation. The new company is owned two-thirds by Moorwoods and one-third by Vulcan-Mart Corporation. In September, Moorwoods will be integrated into Moorwood-Vulcan.

Mr. Firth said that about half the production of the new factory would be to American designs. In preparation for reorganization, the foundry at Moorwoods has gone and the heavy-fabrication department not connected with the manufacture of catering equipment will close on July 28. Alternative work will be offered to all displaced staff. Moorwoods and Vulcan-Mart are investing £600,000 of capital in the new company and the new factory will cost about £250,000.

Publications Received

Russian Castings Production, January 1961. Published by the British Cast Iron Research Association, Alvechurch, Birmingham; annual subscription £10 10s. (UK), $35 or £12 10s. (abroad).

This is the first issue of a cover-to-cover translation of the Russian monthly foundry journal, *Liteinoe Proizvodstvo** and as such is deserving of careful scrutiny, both as to whether or not the BCIRA have made a good job of converting the text into the English language and as to the technical content of the issue.

On the first score, the reviewer has nothing but praise, a really difficult job has been very well done. To the layman, it might appear that anyone sufficiently conversant with a foreign language could translate it, but this is definitely not the case with technology—and particularly Russian foundry technology—where almost every sentence has special interpretations peculiar to the industry, making mere literal translation quite meaningless. Best it is if the translator is himself a foundryman, failing that, very close co-operation between the translator and the technical editor is necessary. Careful examination of the text of this first issue reveals it to be almost faultless in its use of foundry parlance and thus the authenticity and dependability of the text can be accepted without question—a most important assurance.

On points of detail, the reviewer puts forward the mild criticism that he would prefer test values and mensuration data to be duplicated in British units, for not all readers are yet capable of appreciating at a glance just what "m^3/min. m^2" and "kg/mm^2" are equivalent to in terms of cu. ft. per min. per sq. ft. or tons per sq. inch. Another similar point is where the word "riser" is used instead of "feeder," but this substitution (like the use of "permanent-mould casting" for "gravity-die-casting") is, unfortunately, almost universal.

As to the contents, just as "one swallow doesn't make a summer," no more should one issue of *Russian Castings Production* be regarded as more than an indication of the range of articles to be expected in the year's coverage. However, analysis of the contents of the January issue shows the coverage to be not dissimilar from our own JOURNAL. In the month's issue, there is one article on steel casting, five on various aspects of ironfoundry practice, one on fettling, another on scrap reduction and no fewer than three on processes for producing dimensionally-accurate castings. Then there are short practical notes under the heading of "Exchange of Experience," two conference reports, a note on moulding clays and two correspondence items—the whole presenting a very fair balance, but for the omission of articles on non-ferrous sand founding (an omission not rectified in the February issue, according to the advance contents list). An interesting aspect of this magazine is that it reveals the Russian approach to foundry problems. This is well shown in the article: "Scrap Reduction—an Important Source of Increased Output in the Foundry Industry," as the author does not "pull his punches" in telling one district what they should do to improve quality and output.

If in the course of a year, just one worthwhile piece of information can be culled from such a journal, then on its successful application to works practice, the annual subscription can become negligible by comparison. This is the way in which prospective purchasers should view *Russian Castings Production*. Moreover for the first time, it gives a positive answer to the niggling question as to what Russian foundrymen are doing; it shows in fact that they are beset by the same problems and difficulties as those in other countries.

The letterpress of *Russian Castings Production* is clear, though the absence of cross-column headings makes it look heavy-going—an impression reinforced by the inclusion of a fair amount of mathematics in some articles. However, in this it is no different from a number of other Continental foundry publications. Line illustrations are good and half-tone reproduction not bad considering original photographs are not available to the translators. All in all, the translators and other staff at BCIRA responsible for this work can congratulate themselves on a worthwhile launching of a useful supplement to the world's foundry literature. The reviewer predicts that if the quality of the first issue is maintained, world-wide subscriptions should soon repay the effort involved.

*Subsequent translations will appear monthly, approximately three months after the originals in Russian.

BCIRA Journal—Correction:

It is regretted that when reviewing BCIRA Journal vol. 9 No. 2 in this section of the JOURNAL of June 29, an unfortunate omission of text gave a misleading impression of the research work reported on. To correct this, the relevant passages are re-quoted below:—

No. 587: Graphite Injection through the Tuyeres of a Cold-blast Cupola, by H. J. Leyshon, R. B. Coates and K. E. L. Nicholas. A Patent application has been made by the Association in connection with this research and the authors have summarized their work in the following statement:—

To obtain high-carbon contents in the metal produced in an acid-lined cold-blast cupola, a high percentage of pig-iron or a high coke-charge:metal ratio must be used. Alternatively, carburizing agents may be added to the ladle or receivers. Both these methods suffer from economic or practical disadvantages.

A process has been developed for injecting powdered graphite through one of the tuyeres of the cupola, using compressed air as the carrier gas. Details of the equipment required and the procedure are given in the report and the effects on casting properties, notably chill and shrinkage, are considered. Graphite injection enabled a substantial carbon pick-up to be achieved and this suggests some interesting possibilities, principally a reduction in the cost of cupola charge-materials. The metal produced showed a reduction in chill and shrinkage.

No. 588: Factors Influencing the Inoculation of Cast Iron, by J. V. Dawson. For this research, the author has listed the following conclusions:—

A—Flake and nodular-graphite irons:

(1) Normal commercial ferro-silicon is a powerful inoculant due to the presence of aluminium and calcium dissolved in it.

(2) Inoculants containing either aluminium or calcium are less effective than those in which both elements are present.

(3) If the particle size of the ferro-silicon lies between about 12 mesh and ¼-in. by ¼-in. little variation in inoculation is likely to occur as a result of changes in the size grading of the ferro-silicon.

(4) Increasing the carbon equivalent of the melt reduces the effectiveness of inoculation by normal ferro-silicon.

B—Flake-graphite irons only:

(5) Increasing calcium contents up to 7 per cent. in low-aluminium ferro-silicon gives increasing inoculation

Publications Received

and about 7 per cent. is high enough for general use.

(6) Mischmetal up to 0.04 per cent. of the iron, either by itself or added with ferro-silicon, gives good inoculation but the addition needs accurate control and may not be a practical proposition.

(7) Graphite is a very potent inoculant in flake irons both by itself and when added with ferro-silicon. Care must be taken to avoid too much carbon pick-up resulting from solution of the graphite, as a reduction in strength will result.

(8) Inoculation of irons of above 3.9 per cent. carbon equivalent value can cause a reduction in mechanical strength even though some increase in nucleation occurs.

(9) The degree of nucleation of the melt does not necessarily increase consistently with increasing carbon equivalent in batch-melted metal.

C—Nodular-graphite irons:

(10) Good inoculation is essential in the production of nodular irons to achieve the required structures and mechanical properties as cast.

(11) Increasing additions of normal commercial ferro-silicon give progressively increasing inoculation but only slight increases result from similarly increasing additions of low-aluminium ferro-silicon.

(12) Good inoculation is given by additions of SMZ alloy and fairly good inoculation is achieved by additions of calcium silicide giving equivalent silicon additions.

(13) Mechanical properties are markedly influenced by the carbon equivalent of the base iron, the tensile strength decreasing and the elongation increasing as the carbon equivalent increases.

(14) As the inoculation temperature and hence the pouring temperature decreases, the degree of nucleation increases.

(15) Superheating the melt has little effect on the resulting nodular iron.

D—These conclusions apply to nodular irons but for flake-graphite irons the converse is true:

(16) No inoculation is given by adding aluminium or calcium metal with the ferro-silicon.

(17) Fairly good inoculation is given by low aluminium ferro-silicon containing about 2 per cent. calcium but increasing the calcium content above this level progressively reduces the inoculation again.

(18) No inoculation is given by additions of mischmetal.

(19) Plunging crushed graphite has no inoculating effect.

Russian Commercial Dictionary. Published by the British Iron and Steel Federation, Tothill Street, London, S.W.1; price single copies free, bulk supplies as against quotation.

As a practical contribution towards the present trade drive between the UK and the Soviet Union, the British Iron and Steel Federation has prepared a 142-page English/Russian, Russian/English glossary of commercial expressions in its series of "Concise" pocket dictionaries. This new issue covers a wide range of terms likely to be needed in business correspondence connected with most branches of trade and industry.

Although compiled mainly for use at the British Trade Fair in Moscow, and at the subsequent Soviet Exhibition in London, the glossary will undoubtedly fill a long-term need, especially as most of the expressions included are not to be found in the ordinary dictionaries generally available. Moreover, the usefulness of the various terms is enhanced, wherever possible, by the insertion of complete phrases instead of single words.

Catalogues

Electric Furnaces. Publication No. FD/60/F3, of G. W. B. Furnaces, Limited, Dibdale Works, Dudley, Worcs, covers the GWB Lectromelt range of furnaces. The reviewer well remembers the appearance of this furnace on the market some 50 years ago. The trade literature of that time covering electric furnaces invariably included figures giving current and electrode consumptions, refractory costs, and a host of arguments covering the excellent properties, based at that time, with little supporting evidence, on the low sulphur and phosphorus content of the metal. The catalogue under review is addressed to a public familiar with the general performance of electric furnaces, so that in its 44 well-illustrated pages is stressed the engineering characteristics, and commercial information is given as to shipping weights and volumes. The capacities of the furnaces now run from 2 cwt. to 200 tons. It is a thoroughly modern brochure designed to meet the needs of works' engineers.

Spark-resistant Tools. Optoshield, Limited, 146, Clerkenwell Road, London, E.C.1, use publication St.5660 to illustrate and describe a wide range of hand tools made by Ampco Metal Inc., of Milwaukee, for whom they act as agents. Included in this leaflet are wire brushes, chisels, hammers, scrapers, shovels, pliers, spanners of various types and wrenches. With this leaflet there was included a technical data sheet giving the composition of three alloys entering into the spark-resistant range.

Dolomite Bricks. In publication No. 125, General Refractories, Limited, Genefax House, Sheffield 10, detail all the chemical and physical properties of their brand of dolomite bricks —"341"—and give outline sketches of the furnaces and plant which use them. These bricks are available in all the usual sizes normally associated with silica bricks. Realistic instructions are given as to storage, which is of great importance as deterioration due to weather conditions can be experienced.

Air Valves and Cylinders. A well-produced, easy-to-understand catalogue has been received from Stuart Davis, Limited, Stonebridge Highway, Willenhall, Coventry. A useful introduction carries a table relating cylinder-bore diameter with line pressure, and thereafter numerous types of cylinders are described and clearly illustrated. As the brochure develops the many varieties of valves available are covered. It is a really good example of a modern trade publication.

Magnesia Ramming Composition. Publication No. 129 M.P. also issued by General Refractories, Limited, from the address quoted above, tells of the use of a material, called Ramag, for lining electric and open-hearth furnaces. Though capable of being rammed it only carries four to five per cent. moisture by weight. The elimination of tar bonding is an obvious advantage for diminishing the rebuilding and burning-on times. The leaflet gives both the physical and chemical properties of the material and includes some practical hints for installing new furnace hearths.

W. C. Holmes & Company, Limited, Turnbridge, Huddersfield, in publication No. 88 illustrate and caption the various types of plant made by their chemical-engineering, gas-handling and gas-cleaning divisions.

News in Brief

FROM JULY 22, the address of John Miles & Partners (London), Limited, consulting engineers, will be Moor House, London Wall, London, E.C.2 (telephone: METropolitan 0471).

THE IRON FOUNDRY of James Henderson, Quaker House Yard, off Doncaster Road, Belle Vue, Wakefield—a two-storey building—was badly damaged by fire during the early hours of last Friday morning.

THE £44,000,000 LOAN works programme, to be undertaken in South Australia in the next financial year, will enable a start to be made on a railway to connect Port Lincoln with special ore deposits at Coffin Bay.

ALUMINA JAMAICA, LIMITED, last year produced 638,379 tons of alumina, the equivalent of nearly 2,000,000 tons of crude bauxite. Exports in 1960 totalled 664,779 tons, as against 399,210 tons the previous year.

THE INSTITUTE OF FUEL, 18, Devonshire Street, Portland Place, London, W.1, have issued a book which after giving the origin, objectives and activities of the Institute, lists its officers, Council, committee and members.

HENRY MCNAIR & COMPANY, LIMITED, engineers, Ryall, near Stamford, Lincolnshire, had a display of heating appliances for the home and castings for industry at the company's stand at the recent Stamford Industrial Exhibition.

Mr. J. D. WRIGHT has been appointed manager of the Templeborough melting shop of the Steel, Peech & Tozer branch of the United Steel Companies, Limited, from July 1. He succeeds Mr. H. H. ENGLAND, who has resigned.

HOWARD & BULLOUGH, LIMITED, textile-machinery manufacturers, celebrated completion of the major reorganization of their Globe Works at Accrington by inviting representatives of the spinning industry to the works during the week ended June 24.

AWARDS FOR LONG SERVICE have been presented to 38 employees of Ductile Steel Stockists, Limited, Willenhall. Included in the recipients were four directors. The awards came during celebrations to mark the firm's 25 years as a public company.

BIRMID INDUSTRIES, LIMITED, has agreed to purchase the capital of Sterling Foundry Specialities, Limited, of Sterling Works, Bedford and Jarrow-on-Tyne, for £533,460 cash. It will be recalled that Pneulec, Limited, is also a subsidiary company within the Birmid group.

ANOTHER EIGHT COMET HAULAGE CHASSIS have been ordered by the iron and steel works at Durgapur, from Ashok Leyland, Limited, of Madras. They will be equipped with all-steel platform bodies by Associated Indian Enterprises Pvt., Limited, of Calcutta.

THE 600 GROUP OF COMPANIES has issued a very informative and useful folder, which combines a directory of all their various subsidiary companies, the location of the works operated by each one and their overseas activities, with short notes as to their products and activities.

PAKISTAN INTERNATIONAL AIRLINES have ordered another three Leyland single-deck buses for use on airport services. The contract, placed through James Finlay & Company, Limited, of Karachi, calls for three Tiger Cub PSUC1.1 models powered by 95-h.p. underfloor diesel engines.

STAVELEY IRON & CHEMICAL COMPANY, LIMITED, recently acquired by Stewarts and Lloyds, Limited, has merged its sales organization with that of Stanton Ironworks Company, Limited, another concern of Stewarts and Lloyds. The new style is Stanton and Staveley Sales, Limited.

AT A RECENT PRESENTATION in Deptford Town Hall, 236 employees of J. Stone & Company (Deptford), Limited, a member of the Stone-Platt group, received the company's recognition for long service. Those with 40 years' service received gold watches and those with 25 years' service, silver watches.

A PARTY of 12 Lebanese trade unionists visited the River Don works of the English Steel Corporation, Limited, Sheffield, last month. They were conducted round by Mr. Eric Tindall, the labour manager, and also saw the English Steel Corporation film, "Engineers in Steel," with the sound track in French.

MARCO CONVEYOR & ENGINEERING COMPANY, LIMITED, announce that Mr. H. S. Atter, their London and Home Counties representative, will now act in a similar capacity throughout England and Wales, operating from head office, Leytonstone, London. The representation in Scotland is not affected and remains as at present.

CONTRACTS TO SUPPLY about 50 Aquaspray wet-type dust-collectors, worth about £110,000, to Strojimport, Prague, Czechoslovakia, have been signed by the dust and fume control division of Tilghman's, Limited, Altrincham, a member of the Staveley group of companies. The collectors will be operated in conjunction with foundry exhaust systems.

MR. C. F. HURST, president of the Sheffield and District Works Sports Association, presented prizes for the Association's indoor competitions on July 8. The league winners were Edgar Allen & Company, Limited; runners-up, Hadfields, Limited. The team knock-out championships was won by Edgar Allen & Company, and the runners-up were Presto Sports.

ACCORDING TO THE ANNUAL REPORT of the Northern Rhodesian Mines' Department, 1960 set new records for the production of copper, manganese and gold. The value of all minerals produced was nearly £3,750,000 higher than the previous year's record. During the year, the number of Africans employed by the mines went up by about 1,500, but there were 250 fewer Europeans.

A EUROPEAN COMPUTER MANUFACTURERS' ASSOCIATION (ECMA) has recently been established with headquarters and secretariat in Geneva. The first president of the Association is Mr. C. G. Holland-Martin, research director of International Computers and Tabulators, Limited. Mr. P. Dreyfus, Compagnie des Machines Bull, is vice-president, and the treasurer is Mr. M. R. Pedretti, I.B.M. World Trade Corporation, France.

METROPOLITAN-CAMMELL CARRIAGE & WAGON COMPANY, LIMITED, of Birmingham, announce a new order from Pakistan Eastern Railways for 1,000 steel covered goods wagons for service in East Bengal handling jute traffic. The company decline to reveal the value of the contract in view of the fierceness of competition in the industry at the moment. This latest contract is the seventh wagon order from Pakistan in the last 10 years.

AN ORDER for another fast diesel cargo-passenger liner, worth about £1,000,000, has been placed by Ben Line Steamers, Limited, with Charles Connell & Company, Limited, Glasgow. The new ship will be similar in dimensions and performance to the Benloyal, the Bengloe, and another diesel-driven ship at present under

News in Brief

construction. Delivery date is 1963 and an official of the builders said that the order was taken at a keen fixed price.

THE FIRST MAJOR STEPS in the construction of one of the largest boiler installations in the world—at the £40,000,000 power-station at Thorpe Marsh, eight miles from Doncaster, were taken on July 7. Constructional engineers of the International Combustion Company, Limited, directed operations as a massive boiler weighing 85 tons was hoisted into position. It was the first of two similar boilers. Work on the site is due for completion in 1963.

IN COMPETITION with 11 other British shipbuilding firms, Simons-Lobnitz, Limited, Renfrew, have secured an order worth nearly £484,000 to build two hopper barges for the Clyde Navigation Trust. These will be the first diesel-driven hoppers operating in the Clyde and will be driven by twin-propellers at a speed of 10½ knots. Each will have two British Polar engines of 600 h.p. The 208-ft. long hoppers will have a capacity of 1,200 tons.

SPECTACULAR DEVELOPMENT has been forecast for the new steelworks, to be built for the Broken Hill Pty. Company at Whyalla, South Australia. Mr. York Syme, chairman of directors of the company, has stated that expenditure of £A19,000,000 had been authorized for the steelworks. £A4,000,000 had been spent so far, and a further £A8,500,000 are already committed. Mr. Syme stated this after the launching of a new bulk ore-carrier at the shipyards.

AS PART OF A FIVE-WEEK EUROPEAN TOUR four Canadian members of the sales organization of an international group of aluminium producers—Aluminium, Limited—visited two Coseley works last weekend. In the morning they watched their company's products being processed for prefabricated-building purposes at Coseley Buildings, Limited, Lanesfield, and in the afternoon were present at the Ettingshall works of John Thompson (Beacon Windows) Limited.

TWO GLASGOW FIRMS have had their assessments increased more than five times in the revaluation of the city. William McPhail & Sons, Limited, brassfounders, Grovepark Street, rise from £180 to £950; and L. Sterne & Company, Limited, Crown Iron Works, go up from £1,008 to £5,935. The engineering firm of A. & W. Smith & Company, Limited, faces an increase from £609 10s. to £4,200. Colvilles, Limited, at General Terminus Quay, rockets to £29,997 from £11,375.

TWO SHIPS specially built for container traffic introduced by British Railways on the route between Heysham and Belfast, provide, together with ordinary cargo vessels, a total of 18 sailings a week in both directions, on which containers can be carried. It is pointed out by British Railways that apart from reducing the risk of damage, containers eliminate time wastage caused by handling at intermediate points and a greater saving in the cost of returned empties is gained.

THE LINER STRATHAIRD, which carried passengers between Australia and Britain for nearly 30 years, has made its last voyage to Australia. Two other vessels, the Taiping and the Changte, have been sold for scrap after more than 35 years on the Australia/Hong Kong run. They were built for the Australian Oriental Line in 1925, and will not be replaced on the run. The Changte is scheduled to make its last trip next month; the Taiping in August. They will go to Hong Kong shipyard to be broken up.

A STUDY CONFERENCE ON EAST ASIA, organized by Oversea Service, will have as its opening speaker Mr. T. Swaminathan, the Consul-General of India for Economic Affairs in Britain. The conference is to be held at St. Andrews, Scotland, and delegates will be accommodated at Abbotsford House, in the centre of St. Andrews. Registration forms, also a list of other residential courses, may be obtained from Mr. H. B. T. Holland, general secretary, Oversea Service, 2, Eaton Gate, London, S.W.1.

A MAJOR FREIGHT OPERATION involving the transporting of 17,000 tons of prestressed-concrete pressure-pipes from Stanton Ironworks, near Derby, to the Bristol area is being carried out by the East Midlands Division of the London Midland Region of British Railways. The operation is in connection with the Bristol Waterworks Company's Sharpness Abstraction Scheme which will supply water to the new works of Imperial Chemical Industries, Limited, at Severnside near Avonmouth and also to the Bristol area domestic water supply.

UNITED STEEL COMPANIES, LIMITED, of Sheffield, brought into use their new 800-yards-long airstrip at Coal Aston, near Sheffield, on July 4. The first aircraft to land was the group's six-seater Piaggio P 166, carrying Mr. Kenneth G. Lampson, managing director (sales) from London. The United Steel Companies also have airstrips at Workington and Scunthorpe, so that all the company's main works are now accessible by air. Last year their aircraft totalled about 1,000 flying hours. The group is a founder-member of the newly-formed Business Aircraft Users' Association.

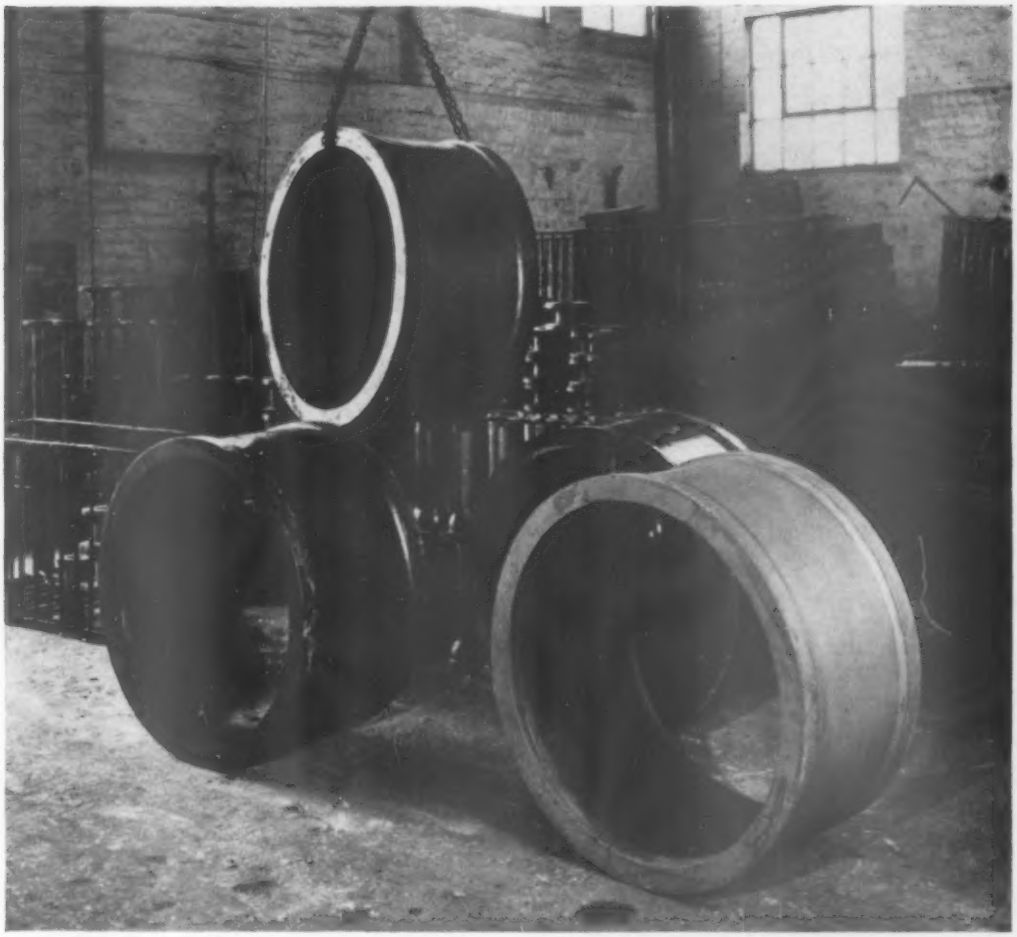
AN INQUIRY by the Northern Ireland Development Council into transport costs as a factor affecting industry in Ulster, showed that of the 15 types of industry covered by the inquiry, in all but one transport of finished products from Northern Ireland did not exceed 2.8 per cent. of the sales value; in 10 of the industries transport costs were less than 1.5 per cent. Costs of inward transport of raw materials were in all cases less than 2 per cent. and in nine industries were under 1 per cent. of sales value. The inquiry was undertaken to obtain information for the guidance of firms considering establishment of new factories in Northern Ireland.

Wild-Barfield Export Orders

The considerable number of export orders recently received by Wild-Barfield Electric Furnaces, Limited, of Watford, Herts, have come from at least 10 different countries, ranging from Austria to Australia and Finland to France, and including Japan.

Amongst furnaces called for are vacuum-induction and resistance-heated equipments for Sweden and the International Atomic Energy Agency in Austria and a vertical pit-type, gas-carburizing equipment for Finland. A large-mesh belt-conveyor furnace and an ACE sealed quench furnace will be going to swell the not inconsiderable amount of Wild-Barfield equipment in Holland, while an electron-beam welding unit will be started up in Belgium as well as a pit-type vacuum furnace of the internal-element type.

Billet heating furnaces for India, Tensometer furnaces for Australia and high-speed steel-hardening equipment for France are among others on the list; a significant export is that of a mains-frequency induction-heated aluminium holding furnace to Japan where it will be employed in the manufacture of low-pressure die-cast light-alloy components for use in the automobile industry.



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SAMPLES AND FULL PARTICULARS GLADLY SENT ON REQUEST

Imports and Exports of Iron and Steel in May

The following tables, based on Board of Trade returns, give figures of imports and exports of iron and steel in May this year. Totals for the first five months of 1960 and 1961 are also included.

Total Exports of Iron and Steel

Destination.	Month ended May 31.	Five months ended May 31.	
	1961.	1960.	1961.
	Tons.	Tons.	Tons.
Malta	415	2,678	2,570
Sierra Leone	590	2,048	5,026
Ghana	1,622	8,318	8,230
Nigeria	6,826	25,235	34,685
Union of South Africa	4,923	30,646	28,065
South-West Africa	1,109	3,582	7,173
Rhodesia and Nyasaland	1,915	9,240	15,889
Tanganyika	2,399	5,005	11,770
Kenya	2,318	11,301	17,511
Uganda	86	610	2,108
Mauritius	256	1,867	1,119
Bahrein, Qatar, and Trucial States	2,532	7,556	9,345
Kuwait	2,896	3,121	10,336
India	12,148	102,439	90,699
Pakistan	14,892	30,122	31,621
Singapore	4,027	8,111	13,046
Malaya	1,810	8,297	12,440
Ceylon	5,289	26,042	19,426
British North Borneo	31	2,178	1,125
Hongkong	8,347	29,349	31,124
Australia	10,098	71,608	75,326
New Zealand	24,016	41,761	128,670
Canada	18,130	106,734	60,358
Jamaica	1,480	11,152	7,765
Trinidad	4,392	19,493	17,998
British Guiana	557	3,735	4,272
Other Commonwealth countries	2,278	11,851	11,526
Eire	5,536	26,464	32,063
Soviet Union	1,860	13,458	10,553
Finland	7,476	18,601	25,555
Sweden	12,736	86,814	76,231
Norway	15,016	56,349	57,171
Denmark	5,493	45,192	36,883
Poland	3,551	5,329	10,812
Western Germany	10,833	70,465	41,886
Eastern Germany	2,093	12,247	10,489
Netherlands	17,988	56,235	61,472
Belgium	3,939	16,743	13,266
France	2,343	2,979	5,785
Switzerland	3,070	5,458	10,191
Portugal	2,713	6,723	11,087
Spain	2,409	20,475	10,219
Italy	6,542	19,091	28,790
Austria	416	2,255	2,347
Yugoslavia	2,553	20,673	18,638
Greece	2,185	7,494	14,614
Turkey	1,725	5,048	8,343
Netherlands Antilles	52	2,024	285
Portuguese East Africa	381	1,774	1,368
Egypt	3,389	6,464	16,847
Libya	998	2,923	4,348
Sudan	922	4,699	3,857
Israel	2,070	9,206	9,666
Saudi Arabia	242	196	710
Iraq	1,411	10,485	21,274
Iran	2,724	31,604	12,353
Burma	436	3,848	2,261
Thailand	337	3,046	2,569
Indonesia	185	14,179	2,559
China	574	26,046	9,725
Japan	10,642	35,100	53,143
Philippine Republic	697	4,534	1,874
USA	18,949	132,695	54,624
Cuba	84	5,121	775
Mexico	472	3,384	2,126
Columbia	615	3,643	5,404
Venezuela	2,227	21,239	10,123
Ecuador	333	1,519	1,445
Peru	588	3,198	3,869
Chile	532	1,274	1,805
Brazil	4,015	8,460	8,534
Uruguay	323	4,670	4,194
Argentina	18,708	43,524	68,731
Other foreign countries	7,509	30,312	30,564
TOTAL	327,280	1,497,409	1,482,751

Total Imports of Iron and Steel

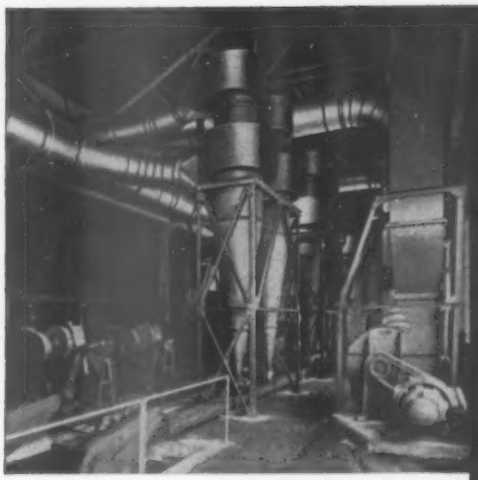
From	Month ended May 31.	Five months ended May 31.	
	1961.	1960.	1961.
	Tons.	Tons.	Tons.
Union of South Africa	4,706	16,050	17,122
Rhodesia and Nyasaland	847	3,028	16,781
Canada	5,110	27,872	57,967
Other Commonwealth countries and Eire	2,168	11,475	14,191
Soviet Union	769	14,027	9,339
Sweden	5,381	20,026	23,401
Norway	11,209	62,628	49,309
Poland	70	7,563	562
Western Germany	1,753	68,680	14,946
Netherlands	8,220	92,894	49,102
Belgium	2,277	49,758	21,643
Luxembourg	375	6,756	10,019
France	1,209	29,256	10,482
Italy	20	13,734	250
Austria	492	5,479	2,625
Japan	428	3,137	3,189
USA	985	88,766	6,747
Other foreign countries	1,485	30,410	6,070
TOTAL	47,594	551,539	313,745
Iron and steel scrap and waste fit only for the recovery of metal	1,708	66,484	9,720

Exports of Iron and Steel, by Product

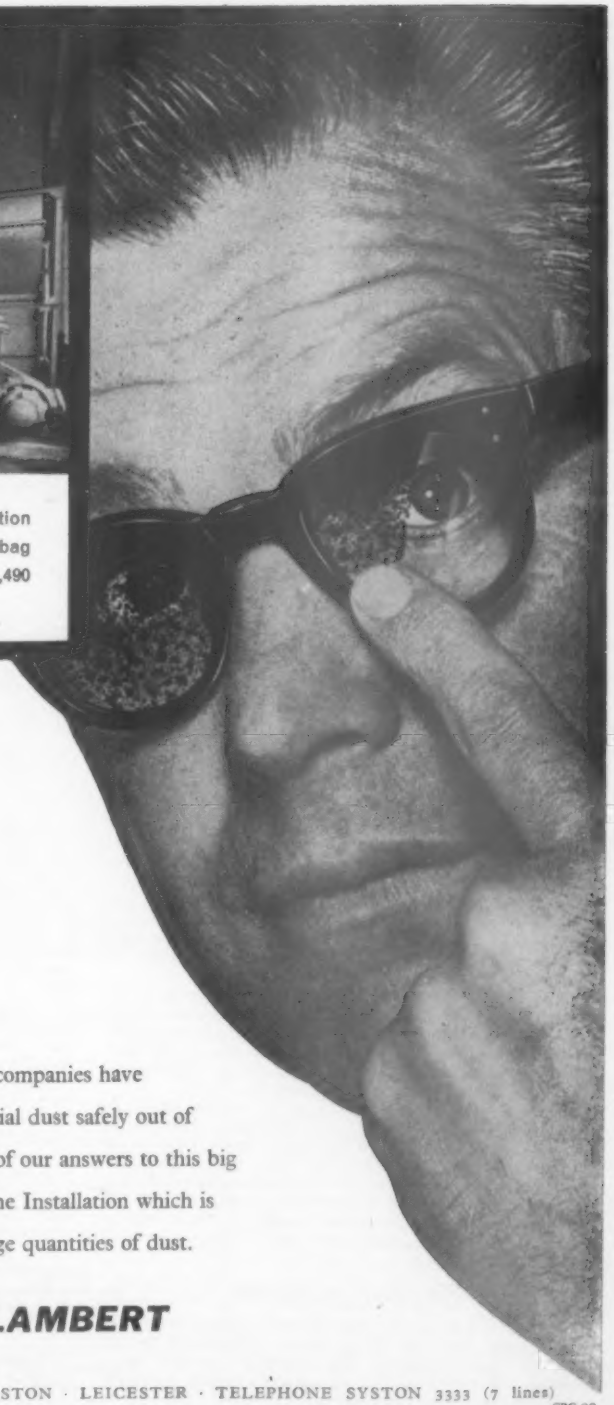
Product.	Month ended May 31.	Five months ended May 31.	
	1961.	1960.	1961.
	Tons.	Tons.	Tons.
Pig-iron	9,854	83,953	41,392
Ferro-columbium (niobium)	2	60	19
Ferro-tungsten	88	467	442
Other ferro-alloys	345	5,241	1,608
Ingots, blooms, billets, slabs, sheet bars (incl. tinplate bars), and similar primary forms	14,242	19,571	38,829
Pieces roughly shaped by forging	179	741	1,079
Iron bars, rods, angles, shapes, and sections	112	642	955
Steel bars, rods, angles, sections, and shapes	7,520	23,735	34,857
Iron plates and sheets	6	409	494
Universal plates	2,543	9,497	7,660
Steel plate, 3 mm. and under 4.5 mm. thickness	2,963	16,540	15,793
Ditto, 4.5 mm. or more in thickness	35,697	149,495	145,998
Blacksheets and blackplate	35,920	132,522	160,511
Hoop and plate	9,371	41,770	54,909
Tinplate	42,660	239,514	189,615
Decorated tinplate	924	2,024	3,161
Galvanized sheets	6,314	33,826	31,596
Other (incl. tinned sheets, terneplate, and ternesheets)	3,625	13,469	17,668
Railway and tramway construction material	19,686	58,824	97,906
Wire rods of steel (incl. alloy steel)	8,825	26,038	27,221
Wire	11,180	55,135	58,020
Tubes, pipes, and fittings	59,979	333,118	283,934
TOTAL	327,280	1,497,409	1,482,751

Mr. D. RIDER has retired from the board of Woodall-Duckham, Limited.

MILLARS MACHINERY COMPANY, LIMITED, Bishops Stortford and London, have secured a contract for the supply of a complete asphalt plant with ancillary equipment worth about £50,000.



This DALLOW LAMBERT Cyclone Installation with its conveyor system and automatic bag filling and sealing equipment, handles 38,490 c.f.m. of dust-laden air.



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CRC 99

Raw Material Markets

Iron and Steel

There is little change in the pattern of business at the iron foundries. The engineering and speciality foundries producing high quality castings are comparatively much better employed than the foundries engaged on other types of castings. Good support continues to be received from the motor car industry whose schedules of delivery, although not approaching those of the boom periods, are nevertheless substantial. The machine tool trade is also specifying freely, and with the orders on hand for many other trades, including the heavy electrical and power plant manufacturers, heavy engineering, the chemical industry, agricultural implement makers, and the steelworks, the tonnages of castings called for overall is at a high level.

Many of the light foundries are finding it increasingly difficult to improve the moderate outputs ruling for some considerable time past. These comprise the foundries which supply castings chiefly to the domestic appliance trades and their mechanized plants are employed well below capacity levels. Many have found it necessary to produce other types of castings, owing to the scarcity of work from the trades to which they normally supply and for which their plants were intended. The light foundries providing castings for the building trades continue to receive regular and fairly satisfactory business, but many of the jobbing and most of the textile foundries are short of work.

The iron foundries are well provided with all the materials they require, apart maybe from the heavier and better qualities of cast-iron scrap, demands for which appear to be in excess of arisings. All grades of pig-iron are in good supply and no difficulty is experienced in obtaining the required tonnages. The low phosphorus irons are bejng taken up in substantial quantities by the engineering and speciality foundries, together with appreciable tonnages of hematite and some refined iron, and deliveries are made promptly against current demands. High phosphorus irons are in steady demand by the light, jobbing, textile, and some of the engineering foundries, but these requirements do not absorb available tonnages and producers are looking out for business from overseas buyers.

Foundry coke deliveries are satisfactory, and ganister, limestone, and firebricks are available on demand.

Most of the re-rollers could undertake much more work. Demands for small bars, light sections, strip, etc., show no appreciable increase on recent tonnages, and the mills find it difficult to maintain production at present levels. Those units producing reinforcing rods and bars have plenty of work on hand.

Home steelworks are able to satisfy current demands for mild steel semis without difficulty, and could supply much larger quantities than those now being called for. Carbon and alloy steel billets are also in better supply and many of the steelworks producing these are able to undertake fresh business.

There is no difficulty in disposing to the re-rollers all arisings at the steelworks of suitable re-rolling defectives and crops.

Non-ferrous Metals

The first meeting of the Second International Tin Council has been the major factor influencing the tin market. Unfortunately, the meeting sparked off a number of rumours and the market began plunging around like a dolphin. In the event, however, the communiqué said nothing about price limits although it did confirm that the Council had asked the US Government to release tin from one of its stockpiles. There is as yet no confirmation that this idea has gone beyond being accepted in principle. And, in fact, there would appear to be complications in the shape of the particular 4,000 tons of tin in question having been distributed amongst some consumers and speculators which must therefore militate against this release from the stockpile being made in the near future or, indeed, at all.

Thus the tin market in London is quieter than it has been for some time and it is also very sensitive. In the long term either some additional metal must be found to satisfy demand or the price will resume its former upward trend. Demand in the UK has slowed down but Japanese buying is relatively heavy while that from the Continent is sporadic but good. The US market is taking its cue from London and is fluctuating directly with London price movements between $1.17 and $1.18 a pound.

Copper is a weak market in London and in New York following the Kennecott wages settlement which, it is understood, will stand for the next 12 months. A sustaining factor has been the unsettled position as to the possibility of a general strike in Rhodesia but the general trend is towards lower levels. Stocks in London are approaching 20,000 tons. In the US the price is unaltered at 31 cents a pound.

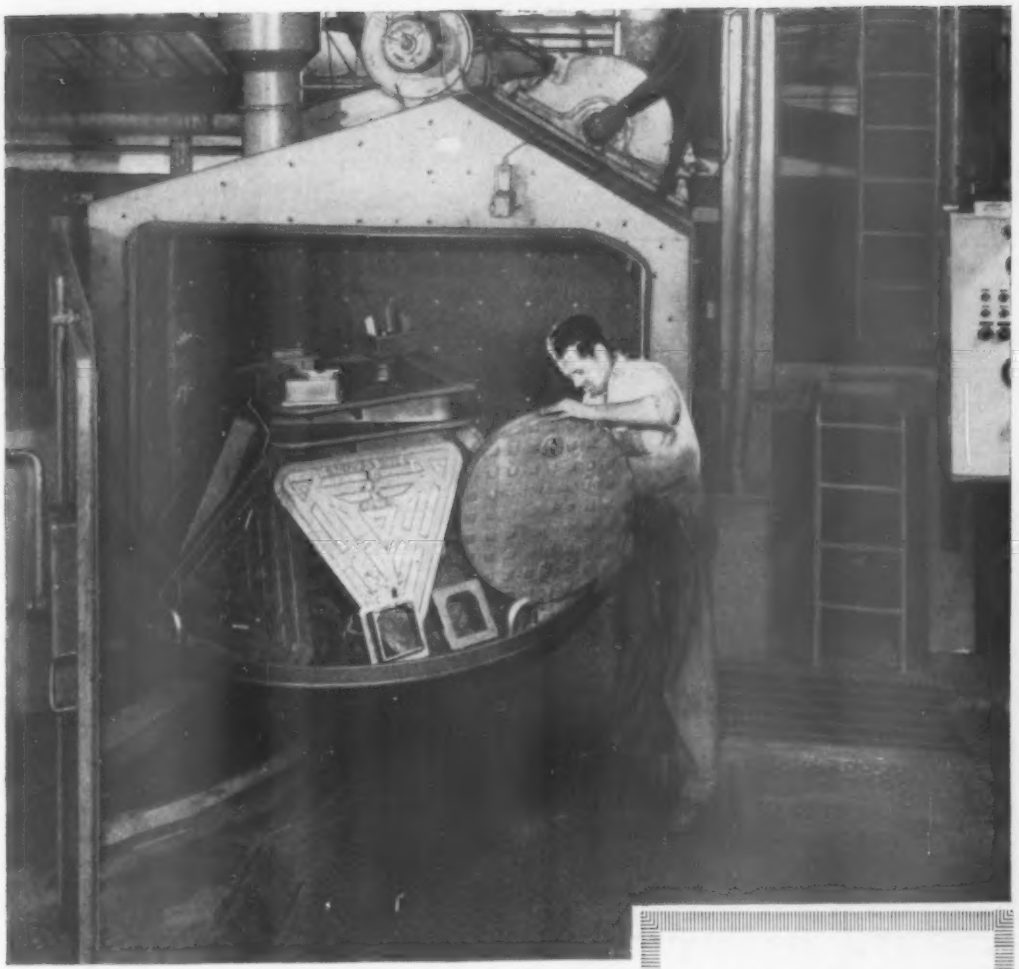
Lead is dull in London with sellers more in evidence than buyers and the quotation is moving narrowly around £64 a ton. In the US the market is also quiet and the price unchanged at 11 cents a pound.

Zinc is also weak in London with sellers predominating and stocks more than adequate. The price is not straying far either way from £78 a ton. In the US there has been a little more activity and the Canadian price—following devaluation—has been raised by ¼-cent to 12 cents a pound. The US price is still called at 11½ cents a pound.

Obituary

The death recently has been announced of Mr. JOHN T. GOODWIN, M.B.E., who presided over the Institute of British Foundrymen in 1927. He was born in 1877 and was, at the time of his death, the doyen of the Institute, having joined in 1905. He was early active in Institute affairs and served on the organizing committee of a convention held in Middlesbrough in 1907. For many years he was general manager of the foundries and engineering departments of the Sheepbridge Coal & Iron Company, Limited, Chesterfield. During the first world war his firm delivered 200,000 tons of castings to the Government. At this time he was captain of the Derbyshire Motor Transport Corps and for his services he received the award of M.B.E. in 1918. He was actively connected with the IBF Sheffield branch and it was in that city that he presided over the annual convention in 1927. Before retirement to Bournemouth he held membership in the Institution of Mechanical Engineers, the Iron and Steel Institute and the Institute of Metals, and also served on the Council of the British Cast Iron Research Associaion. Mr. Goodwin belonged to that older generation of foundrymen who did so much, so unostentatiously, to raise the status of the Institute to its present position amongst the premier technical associations of Europe.

TRIPLEX HOLDINGS, LIMITED—Mr. L. Steel is to succeed Sir Graham Cunningham as chairman.



Baker Perkins Foundry Machinery at work... *at Garton & King Ltd.*

In Exeter, Garton & King Ltd. use this Baker Perkins Swing Table Shot Blast Machine to treat a very wide range of pieces. This machine saves space—it occupies less room than free tunnel type units. It saves power—you don't need compressed air plant. And although it is based on the rotary table principle, it can handle larger and heavier pieces than conventional machines.

Baker Perkins Ltd.

Engineers

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HISTORICAL NOTE

"At the sign of the Golden Hammer".

The predecessors of Garton & King Ltd., were known in 1662, and they have had a foundry since about 1800. They now produce a wide range of municipal castings and gear wheels, besides general engineering castings in iron, gunmetal and aluminium for use at home and overseas.
They still preserve their trade sign of "The Golden Hammer" which has been in use for over 200 years.

Current Prices of Iron, Steel, and Non-ferrous Metals

(Basis prices, delivered unless otherwise stated. In accordance with Iron and Steel Board Price Determination, 1961, No. 2, the prices of products listed below coming under the board's control are increased by 1 per cent.)

July 12, 1961

PIG-IRON

Foundry Iron.—No. 3 IRON, CLASS 2, 10-ton lots or over, Middlesbrough, £21 17s. 0d.; Birmingham, £21 9s. 3d.

Low-phosphorus Iron.—Over 0.10 to 0.40 per cent. P, 10-ton lots or over, £23 5s. 0d., delivered Birmingham; £23 10s. 0d., delivered Grangemouth.

Cylinder and Refined Irons.—North Zone, £25 6s. 6d.; South Zone, £25 9s. 0d.

Refined Malleable.—P, 0.10 per cent. max.; North Zone, £26 6s. 6d.; South Zone, £26 9s. 0d.

Hematite.—Si less than 2 per cent, S. & P. over 0.03 to 0.05 per cent., 10-ton lots or over; N.-E. of England (local iron), £23 19s. 0d.; Scotland (Scotch iron), Zone S.1, £24 5s. 6d.; Sheffield, £25 9s. 0d.; Birmingham, £25 13s. 0d.; Wales (Welsh iron), £23 19s. 0d.

Basic Pig-iron.—£20 3s. 0d., delivered Staffs, Derbyshire, Notts, Lincs, Rutland, Northants, and Leicestershire in 10-ton lots or over.

FERRO-ALLOYS

(per ton unless otherwise stated, delivered)

Ferro-Silicon (6-ton lots and over).—45 per cent. Si, £45 0s. 0d. to £48 0s. 0d., scale 15s. 0d. per unit, lumpy, 75 per cent. Si, £62 0s. 0d. to £66 10s. 0d., scale 15s. 0d. per unit, lumpy.

Ferro-vanadium.—50/60 per cent., 22s. 6d. per lb. of V.

Ferro-molybdenum.—65/70 per cent., carbon-free, 12s.10d. per lb. of Mo.

Ferro-titanium.—20/25 per cent., 2-3 per cent. Cu, £250 0s. 0d.; 38/40 per cent., commercially carbon-free, £287 0s. 0d.

Ferro-tungsten.—80/85 per cent., 10s. 3d. per lb. of W.

Tungsten Metal Powder.—98/99 per cent., 13s. 3d. per lb. of W.

Ferro-chrome (6-ton lots and over, lumpy).—4/6 per cent. C, £81 10s. 0d. to £84 10s. 0d., basis 60per cent. Cr scale 27s. 0d. to 28s. 6d. per unit; over 6 per cent. C, £79 0s. 0d. to £82 10s. 0d., basis 60 per cent. Cr, scale, 27s. 0d. to 28s. 6d. per unit; 2 per cent. C,* 1s. 8d. to 1s. 11d. per lb. Cr; 1 per cent. C,* 1s. 8d. to 1s. 11½d. per lb. Cr; 0.15 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr.; 0.10 per cent. C,* 1s. 9½d. to 2s. 0½d. per lb. Cr; 0.06 per cent. C,* 1s. 11d. to 2s. 1d. per lb. Cr.

Metallic Chromium.—98/99 per cent., 6s. 10d. per lb.

Metallic Manganese.—94/96 per cent., carbon-free, £275 0s. 0d.; 96/98 per cent., £285 0s. 0d.

Ferro-columbium.—65/67 per cent. Cb + Ta, 19s. 0d. per lb., Cb + Ta.

Ferro-manganese (Standard).—78 per cent., £58 10s. 0d.

SEMI-FINISHED STEEL

Re-rolling Billets, Blooms, and Slabs.—BASIC: Soft u.t.s. 100 tons and over, £31 15s. 6d.; tested, 0.08 to 0.33 per cent. C, 100 tons and over, £32 5s. 6d.; hard (0.41 to 0.60 per cent. C), 50 tons and over, £33 17s. 0d.; silico-manganese, 50 tons and over, £42 16s. 6d.; free-cutting, 50 tons and over, £35 4s. 6d. SIEMENS MARTIN ACID (50 tons and over): Up to 0.25 per cent. C; £40 11s. 0d.; silico-manganese, £43 4s. 0d.

Billets, Blooms, and Slabs for Forging and for Stamping (50 tons and over).—BASIC: Soft, up to 0.33 per cent. C, £37 0s. 0d.; basic, hard, over 0.41 up to 0.60 per cent. C, £38 2s. 6d.; acid, up to 0.25 per cent. C, £41 14s. 0d.

FINISHED STEEL

Heavy Plates and Sections (50 tons and over).—Ship plate (N.-E. Coast), £40 7s. 0d.; boiler plates (N.-E. Coast), £42 17s. 0d.; floor plates (N.-E. Coast), £41 16s. 0d.; angles (N.-E. Coast), £38 1s. 6d.; joists (N.-E. Coast), £37 17s. 6d.

Small Bars, Sheets, etc.—Rounds and squares, under 3 in., and flats 5 in. wide and under, untested soft basic, 50 tons and over, £39 1s. 0d.; under 10 tons to 4 tons, £40 18s. 6d.; under 4 tons to 2 tons, £41 3s. 6d.; hoop and strip, coils, 100 tons and over, £38 0s. 0d.; uncoated strip mill coils, hot rolled, under 3 mm. to 12g., 25 tons to under 50 tons, £43 16s. 0d.; black sheets (hand mill), 24g., 10 tons and over, £57 14s. 6d.; galvanized corrugated sheets, 24g., 10 tons and over, £67 11s. 0d.

Alloy Steel Bars.—1 in. dia. and up: Nickel, £66 7s. 0d.; nickel-chrome, £97 1s. 0d.; nickel-chrome-molybdenum, £109 14s. 0d., in lots of 25 tons and over.

NON-FERROUS METALS

Copper.—Cash, £229 10s. 0d. to £229 15s. 0d.; three months, £233 15s. 0d. to £234 0s. 0d.; settlement, £229 15s. 0d.

Copper, Tubes, etc.—Solid-drawn tubes, 2s. 2½d. per lb.; rods, 245s. 6d. per cwt. basis; 20 s.w.g., 280s. 6d. per cwt.

Tin.—Cash, £914 0s. 0d. to £915 0s. 0d.; three months, £925 0s. 0d. to £926 0s. 0d.; settlement, £915 0s. 0d.

Lead (Refined Pig).—First half July, £63 12s. 6d. to £63 15s. 0d.; first half October, £65 2s. 6d. to £65 5s. 0d. settlement, £63 15s. 0d.

Zinc.—First half July, £77 2s. 6d. to £77 5s. 0d.; first half October, £78 5s. 0d. to £78 7s. 6d.; settlement, £77 5s. 0d.

Zinc Sheets, etc.—Sheets, 15g. and thicker, all English destinations, £115 2s. 6d.; rolled zinc (boiler plates), all English destinations, £112 7s. 6d.; zinc oxide (Red Seal); d/d buyers' premises, £95 0s. 0d.

Brass Tubes, etc.—Solid-drawn tubes, 1s. 9½d. per lb.; sheets to 10 w.g., 198s. 9d. per cwt.; wire, 2s. 8½d.; rolled metal, 198s. 9d. per cwt.

Brass (Brazing).—BS1400, B3, £178; B6, £224.

Brass (High Tensile).—BS1400, HTB1, £194; HTB2, £215; HTB3, £230.

Gunmetal.—BS1400, LG2, £220; LG3, £230; G1, ½%, £300; G1, 1%, £290.

Phosphor Bronze.—BS1400, PB1 (AID released), £316; BS1400, 90/10/1, £304.

Leaded Phosphor Bronze.—BS1400, LPB1, £243.

Phosphor Bronze Strip, etc.—Strip, 296s. 3d. per cwt.; wire, 4s. 2d. per lb.; rods, 3s. 5d.; tubes, 3s. 5d.; chill cast bars, solids 3s. 5½d.; cored, 3s. 6½d. (CHARLES CLIFFORD LIMITED).

Nickel Silver, etc.—Rolled metal, 3 in. to 9 in. wide × 0.056, 3s. 11½d. per lb.; round wire, 10g. in coils (10 per cent.), 4s. 4½d.; special quality turning rod, 10 per cent., ½ in. dia., in straight lengths, 4s. 3½d. All prices are net.

Other Metals.—Magnesium, ingots, 2s. 2½d. to 2s. 3d. per lb.; Antimony, English, 99 per cent., £230 0s. 0d. Quicksilver, ex-warehouse, £66 0s. 0d. Nickel, £660 0s. 0d. Aluminium, ingots, £186 0s. 0d.; aluminium bronze (BS1400), AB1, £245; AB2, £253.

* Average 68-70 per cent.

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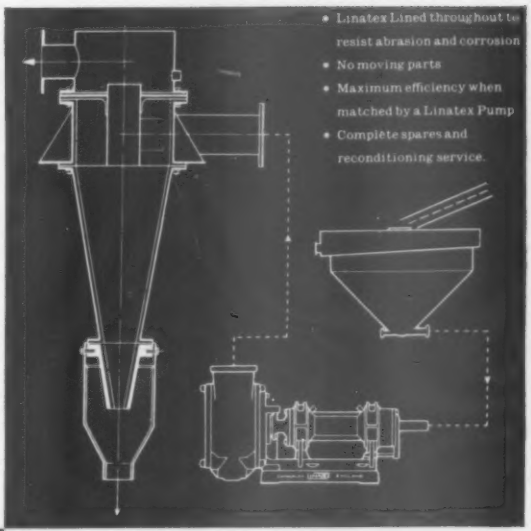
Linatex are indeed well qualified to offer this service. It is based on long, world-wide experience of separating and de-watering materials in the sand and mining industries.
Are you thinking of a complete plant? Or do you wish to know how Linatex units can be used in existing installations? Consult our resident area engineer or ask for a proving test on our pilot plant.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PREPAID RATES: **Twenty words for 10/- (minimum charge) and 4d. per word thereafter. Box numbers 2/6 extra per insertion (including postage of replies). Situations wanted 2d. per word throughout.**

Advertisements (accompanied by a remittance) and replies to Box Numbers should be addressed to the Advertisement Manager, Foundry Trade Journal, John Adam House, 17/19, John Adam Street, Adelphi, London, W.C.2. If received by first post Monday advertisements can normally be accommodated in the following Thursday's issue.

SITUATIONS WANTED

CUSTOMER LIAISON! Can yours be improved? Have you any? Do you know exactly what your customer wants? Do you really satisfy him? Do you follow up your representatives to the hilt? Do you lose orders for the sake of a penny? A word on the spot is worth a dozen impersonal quotations. A foundryman with first class knowledge and managerial experience could be your answer. Can we discuss it and see? Box CL848, FOUNDRY TRADE JOURNAL.

IRON FOUNDRY METALLURGIST TECHNICIAN (29) seeks position technical representative preferably Midlands, but any area considered. Box IF827, FOUNDRY TRADE JOURNAL.

AUSTRALIAN (40), M.I.B.F., settling in U.K., seeks executive position with progressive foundry; experience from jobbing moulder to works manager. Ferrous castings to 20 tons, also non-ferrous. Past seven years executive position. Capable of supervising installation of new plant, and taking complete charge. Box AF825, FOUNDRY TRADE JOURNAL.

WORKS MANAGER/ENGINEER (41) requires new appointment. Successful record includes experience Modern Mechanised Foundries, Repetition Machine Shops, Malleable and Grey Iron, Automatic Moulding, Planning, Installation, Maintenance and Development. Implementation capital works schemes. Good qualifications. Salary required £2,000-£2,500. Box WM847, FOUNDRY TRADE JOURNAL.

SITUATIONS WANTED—*contd.*

FOUNDRY WORKS MANAGER, 48, desires change preferably with non-ferrous foundry in the South or South Midlands. Wide technical, practical and sales experience in all aspects of ferrous and non-ferrous founding including CO_2 and Shell processes. Box FW837, FOUNDRY TRADE JOURNAL.

FOUNDRY DIRECTOR (37), A.I.M., M.I.B.F., with present company 12 years, desires change. Experience covers all aspects grey iron and non-ferrous castings production. Salary required £2,000. Box FD846, FOUNDRY TRADE JOURNAL.

EXPERIENCED FOUNDRY MANAGER wants situation South of England, or abroad, 48 years of age, complete control foundries home and abroad last 20 years, ferrous and non-ferrous, hand or mechanised, sound practical and technical knowledge, good organiser and cost conscious. Box EF838, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT

METALLURGIST REQUIRED. For technological and development work in Steel Foundry. Minimum qualifications L.I.M. or B.Sc. (Metallurgy). Aged 20 to 25 years. Experience of less importance than an intelligent and critical approach to problems. Applications should be marked "Private & Confidential" and addressed to MANAGER, GEORGE BLAIR & CO. LTD., Bond Isle Works, Stanhope, Co. Durham.

SITUATIONS VACANT—*contd.*

BRAINTREE COLLEGE OF FURTHER EDUCATION,
CHURCH LANE, BRAINTREE.

ASSISTANT LECTURER, GRADE "B," for FOUNDRY TECHNIQUES & SCIENCE required 1st September or as soon as possible thereafter. Applicants will be expected to hold the Diploma of the National Foundry College or equivalent qualification, and to have had considerable practical experience.

Salary scale in accordance with the Burnham Further Education Report—£700 × £27 10s. (15) × £37 10s. (1) to £1,150 p.a. with additions for degree or equivalent qualifications and approved training. Increments within the scale allowed for war/national service, teaching experience, or approved industrial experience.

Application forms and further particulars from the College Clerk.

APPLICATIONS are invited for the position of FOUNDRY MANAGER in Grey Iron Foundry, South West England. Output approximately 30 tons per week from jobbing and small mechanised section. Experience in all aspects of greensand, dry sand and CO_2 methods of production essential. Applicant's ability should also cover utilisation and control of foundry personnel, time assessment and control of metals to conform to all B.S.S. Grades. Contributory Pension Scheme after probationary period. This position offers scope and advancement for applicants with initiative and ability. Apply in confidence submitting details of age, experience, qualifications and salary required to Box AA829, FOUNDRY TRADE JOURNAL.

AIC

GENERAL MANAGER
(North West)

Executive Selection Division *is advising on the following appointment*

A General Manager is required for a large new modern foundry and ancillary heavy machine shop. The foundry is equipped with the latest mechanical equipment and will produce principally iron castings within a large range up to approximately 50 tons. The General Manager will be responsible to the Managing Director for the successful running of the works and will control all ancillary services and personnel. The successful candidate should be in the age group 40–50 and possess a sound knowledge of modern management techniques. He should also have some years of proven experience in a similar position and be skilled in dealing with labour problems. This is a senior appointment having excellent prospects for applicants with ability and drive, and carries a substantial salary and remuneration. (Mr. M. P. T. Longworth: Reference 2811)

Brief written applications quoting reference number should be sent in complete confidence to the Consultant concerned at:

Associated Industrial Consultants Limited

KNIGHTSBRIDGE HOUSE 917 KNIGHTSBRIDGE LONDON SW7

SITUATIONS VACANT—*contd.*

TECHNICAL SALES REPRESENTATIVE for High Duty Grey Iron Shell Mould and Sand Castings, for West Midland Foundry. Must have had previous experience in this field, and also have some engineering knowledge. Only men with initiative and ability to get results need apply. Staff Pension Scheme in operation. Full details in confidence, stating experience, age and salary required, also date when available, to Box TS844, FOUNDRY TRADE JOURNAL.

FOUNDRY FOREMAN, Assistant to Manager, required for Grey Iron Foundry in Birmingham Area. Young man aged 25-30 preferred. Applicants must have received thorough practical training in jobbing and batch production of Iron Castings up to 4-5 cwts. Previous experience in handling personnel of definite advantage. Permanent position for man with enthusiasm and ability. Apply Box FF830, FOUNDRY TRADE JOURNAL.

SENIOR LABORATORY ASSISTANT required to control metallurgical analyses in Foundry Laboratory, dealing with cast iron and associated raw materials. Preferred age over 21. Male or female considered. Reply stating age, experience, qualifications and commencing salary required to:

THE SECRETARY,
CLAY CROSS (IRON & FOUNDRIES) LIMITED,
Clay Cross,
Chesterfield.

FOUNDRY ENGINEER for Consultants, 30-40, A.M.I.Mech.E. or equivalent. Nat. Foundry College training an advantage. To assist in planning, engineering and implementing new major foundry and allied materials handling projects. Practical foundry experience essential. Five-day week, contributory pension, canteen, holiday arrangements honoured. Apply in confidence to CAMPBELL, GIFFORD & MORTON LTD., Consulting Engineers, 52 Queens Road, Weybridge, Surrey.

NEW ZEALAND OPPORTUNITY FOR MOULDER (BRASS). A first-class, reliable jobbing moulder, married or single, is required for a small firm in Christchurch, New Zealand. Must qualify for emigration regulations. Excellent wages and conditions, and guaranteed accommodation on arrival. For further information write to: MR. R. J. FRASER, c/o THE NATIONAL BANK OF N.Z., LTD., 14, Charles II St., London, S.W.1

LARGE STEEL FOUNDRY IN YORKSHIRE REQUIRE A METHODS ENGINEER to augment their existing Methods staff. Applicants should have had experience in the gating and feeding of steel castings, preferably for both mechanised and jobbing castings. The Company concerned is a progressive one, thereby providing ample future scope for ability and initiative. Replies in confidence and stating full details of career to date to: THE WORKS MANAGER, Box LS833, FOUNDRY TRADE JOURNAL.

FOREMAN

SEVERAL required by large Iron Foundry producing short series highly cored castings up to 1 ton.

Experienced in Jolt Machine, Greensand and Sand Slinger CO. production.

Previous training for supervision essential.

High salaries include scrap and activity bonus.

Reply, in writing, stating age and experience to: Box FS834, FOUNDRY TRADE JOURNAL.

SITUATIONS VACANT—*contd.*

SALESMAN required for Scottish Company, Grey Iron Founders. Contacts, especially in North, essential. Salary and expenses and car provided. Candidate should give full particulars of foundry and sales experience and indicate present level of earnings. Box SR842, FOUNDRY TRADE JOURNAL

POSITION vacant for experienced PATTERN MAKER for tied Foundry, North Kent. Apply to Box PV836, FOUNDRY TRADE JOURNAL.

AGENCIES

AGENCIES REQUIRED. Well-connected Engineering Company, specialising in aluminium, sand and die castings, seeks to represent reliable mechanised iron foundry able to supply castings at least up to Grade 14. London office available and technical representation in the Home Counties and the South is offered. Please reply to Box AR826, FOUNDRY TRADE JOURNAL.

ESTABLISHED MANUFACTURERS' AGENT, based Manchester covering Lancashire, Cheshire and Yorkshire, desires to represent reputable Iron Foundry. Box EM843, FOUNDRY TRADE JOURNAL.

FINANCIAL

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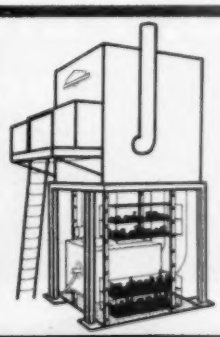

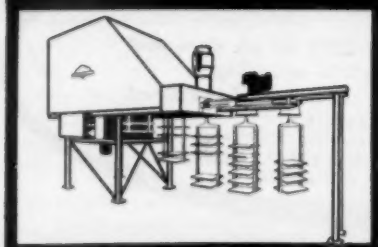

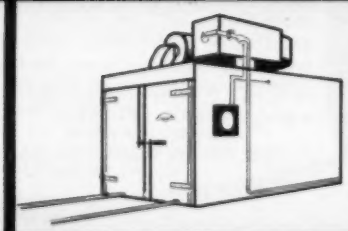

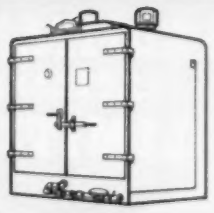

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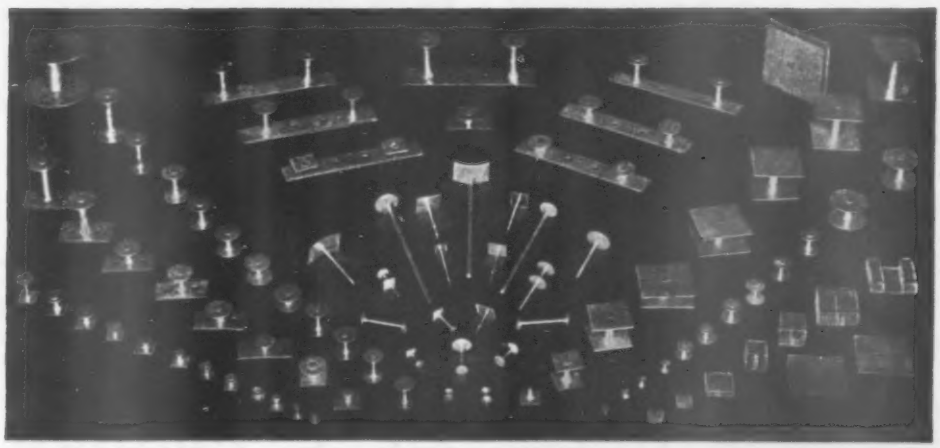

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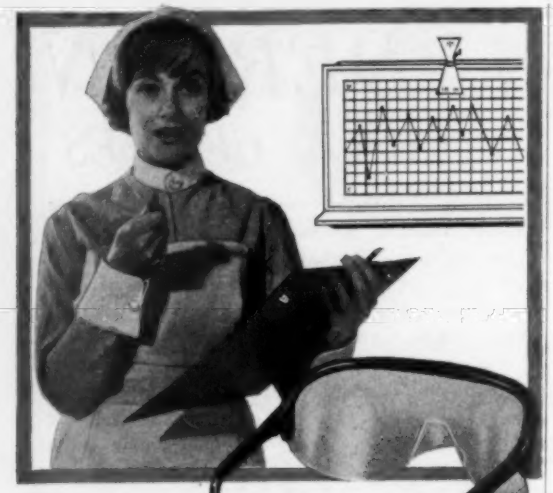

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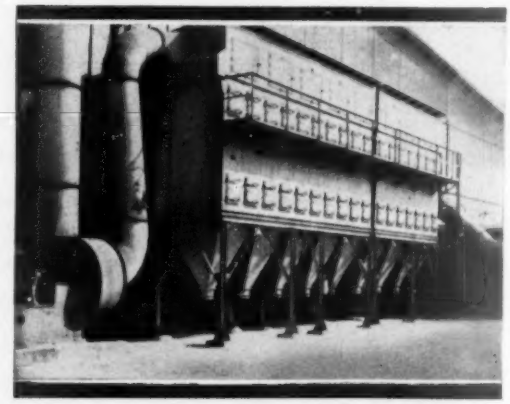

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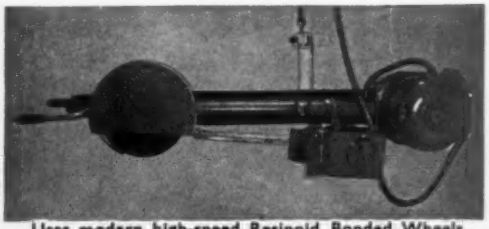

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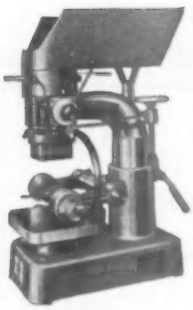

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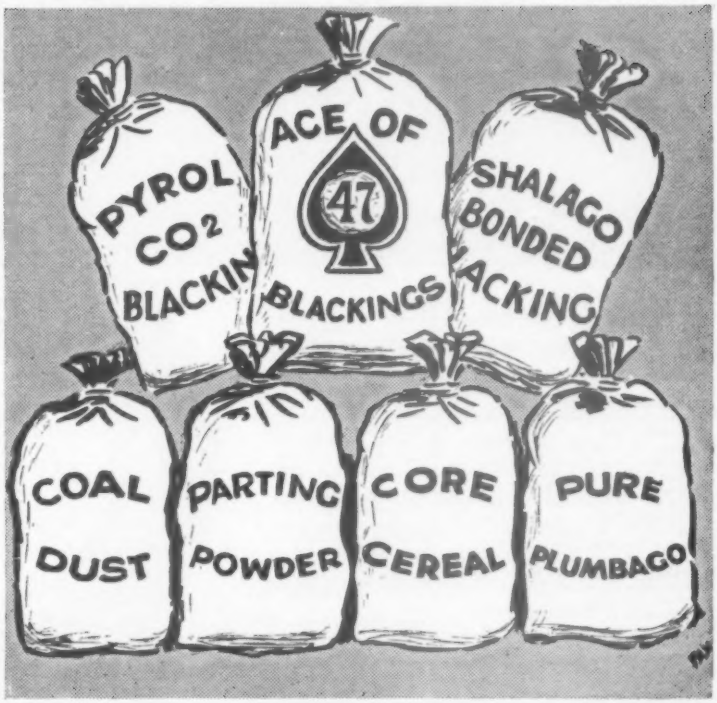

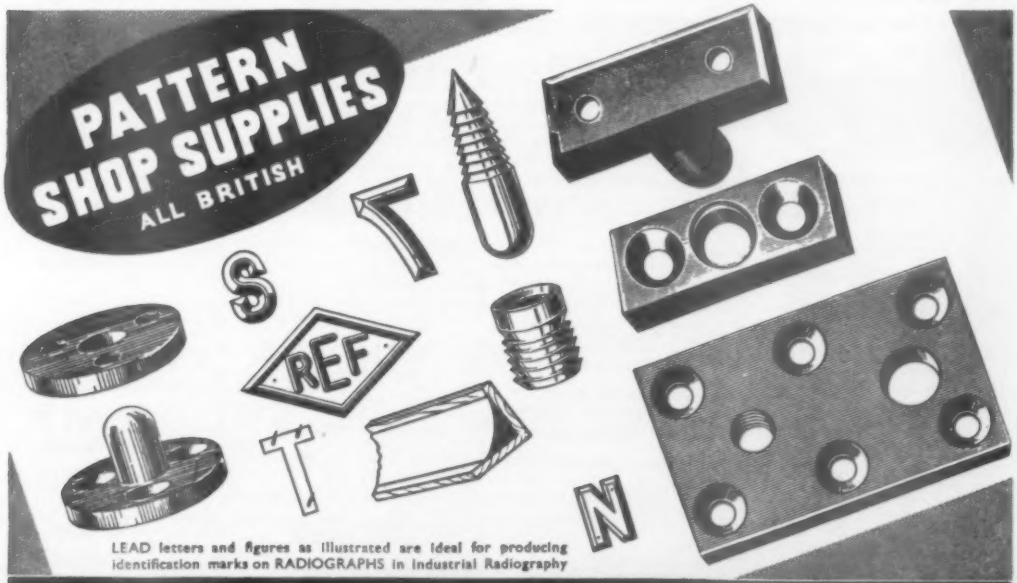

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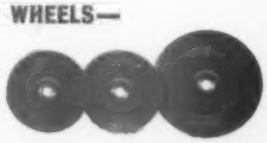

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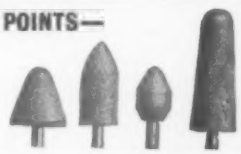

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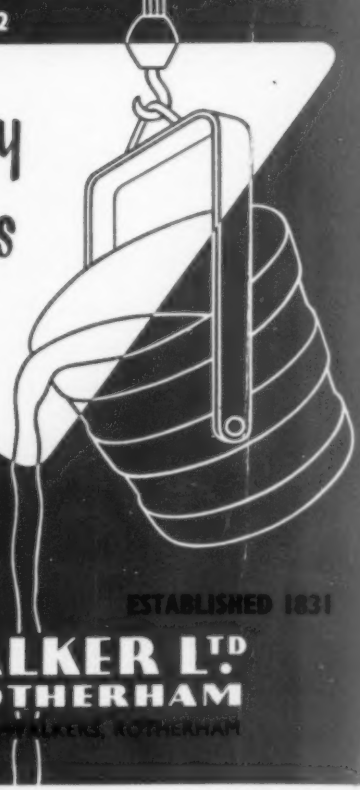

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